VOLUME 41
NUMBER 6

CONVENTION ISSUE

JUNE, 1954

plating

NEW YORK CONVENTION PROGRAM

See Contents Page 629

Welcome to the 1954 Convention

Courtesy of The Port of New York Authority

The Frederick Gumm Chemical Co. extends a cordial invitation to all registrants to be our guests on a beautiful cruise up the majestic Hudson River to Bear Mountain and return on Wednesday, July 14 from 1 to 6 P.M.

Fred Gumm PRES.

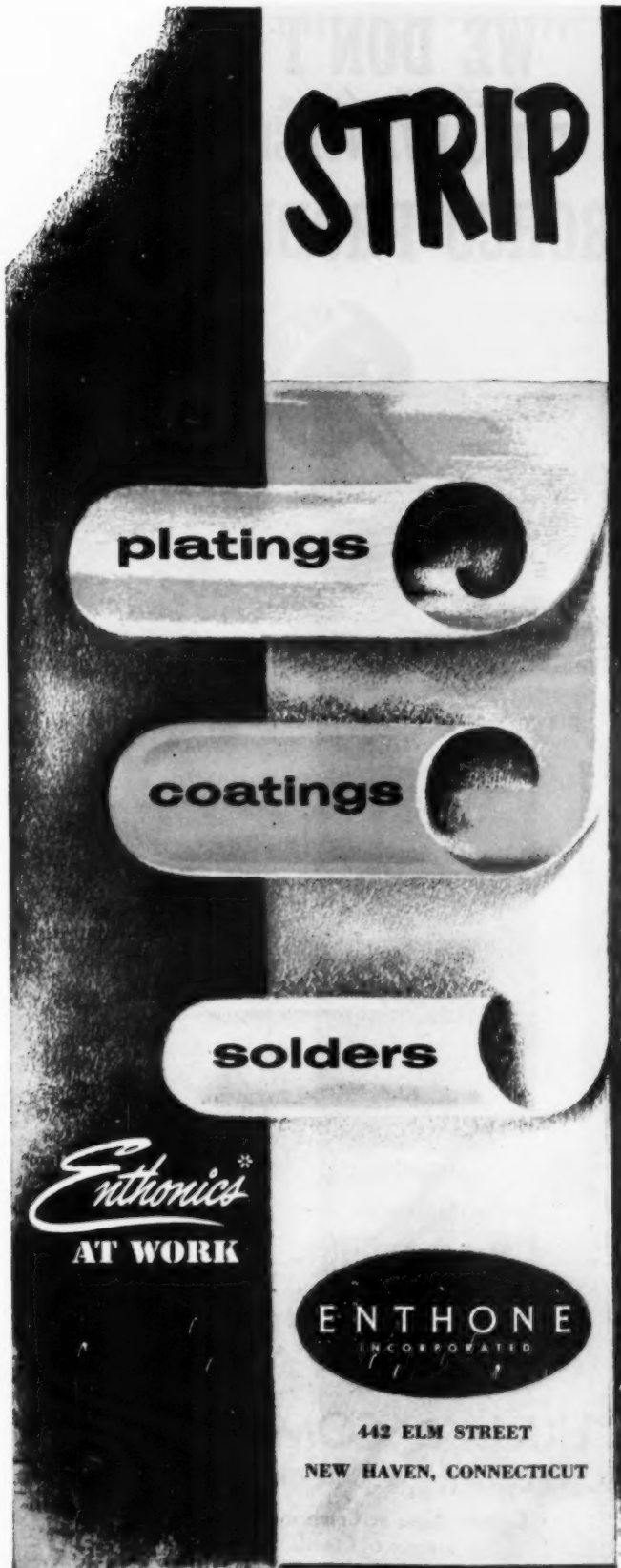
CLEPO CLEANING COMPOUNDS

FREDERICK GUMM Chemical Company, Inc.

538 FOREST ST., KEARNY, N.J.

MANUFACTURERS OF CLEPO PRODUCTS

FOR FURTHER INFORMATION, USE READER SERVICE CARD; INDICATE A 600.



. . . economically . . . quickly with ENTHONE metal strippers

ENTHONE has developed **8** outstanding metal strippers which, without attacking your base metal in any way, quickly and economically strip off defective plated coatings, excess solder, silver brazing metal, and metal smuts.

Where your base metal is	and you want to strip nickel, copper, silver, zinc or cadmium chemically, use **ENSTRIP "S"**, an additive for sodium cyanide solutions, or . . . **ENSTRIP "A"**, which is a prepared compound containing sodium cyanide.
STEEL	where you want to remove copper or nickel coatings electrolytically, use **ENSTRIP 103**, an economical alkaline electrolytic stripper containing no cyanide.
COPPER or STEEL	and you wish to dissolve tin, lead, or tin-lead coatings chemically, use **ENSTRIP "TL"**, a fast acting, alkaline stripper.
ALUMINUM, COPPER or STEEL	and you want to take off heavy chromium coatings chemically, use **ENSTRIP "CR-5"**, a rapid, acid type stripper.
COPPER ALLOYS	use **ENSTRIP "165-S"**, an additive for acid solutions that will give you quick removal of nickel, tin, zinc, lead or cadmium.
ZINC DIE CASTINGS	use **ENSTRIP "L-88"**, an acid electrolytic stripper for removing chromium, nickel or copper coatings.

Write directly to Enthone Incorporated, or to your nearest Enthone Service Representative, for further information.

ARDCO, INC.,
5000 West 73rd Street,
Chicago 38, Illinois

R. O. HULL & COMPANY,
1300 Parsons Court,
Rocky River, Ohio

L. H. BUTCHER COMPANY,
3628 East Olympic Boulevard,
Los Angeles, California

** The Scientific Solution of Metal Finishing Problems*

BEFORE YOU SAY "WE DON'T NEED IT"

LOOK INTO ALL THE *Outstanding* ADVANTAGES OF

ALL THESE ROHCO PRODUCTS!

● ROHCO RINS-AID sheds water; prevents chrome stain; improves drying.

● ROHCO 100 BARREL ZINC BRIGHTENER for brilliant deposits, maximum coverage and lowest cost.

POWDER

LIQUID

● ROHCO 20XL (Liquid or Powder) gives brightest cadmium; minimizes cadmium consumption by improving uniformity of deposit.

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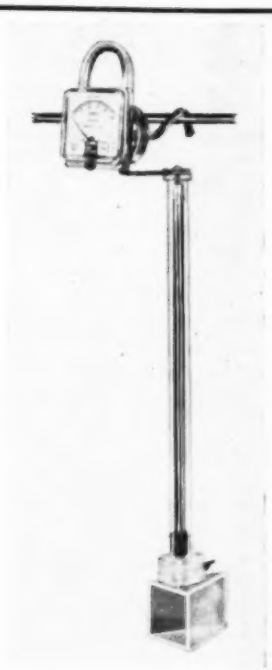
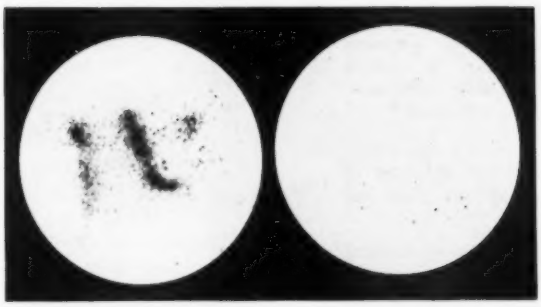


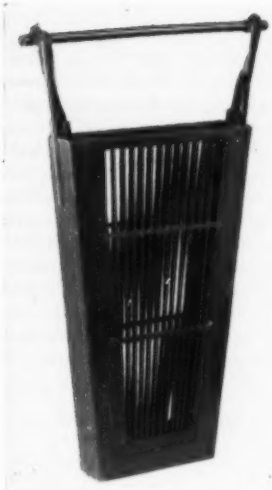
● **HANGING HULL CELL** is a new device for making plating tests under production conditions.



NORMAL CHROME MIST

NO-CRO-MIST® BATH
(No Chromic Acid Mist)

● **ROHCO NO-CRO-MIST®** safeguards workers' health by eliminating chrome fumes; solves ventilating and heating problems; saves chromic acid.



● **FORCITE ANODE BASKETS** with exclusive wedge contacts for new convenience and economy in all plating baths except chrome. Uses low cost metals as well as scrap—saves money.

● **COMET RECTIFIER** and **HULL CELL**—the newest, most convenient rectifier; dual range 6 and 30 amperes, perfect voltage control, filtered output, automatic timer. Other rectifiers are B-1000 and B-267.

a special message for hardware manufacturers

need a finish for protection—decoration—identification? specify IRIDITE®

Specify Iridite . . . for corrosion protection during storage or use . . . for a firm and lasting base for paint . . . for extra quality and eye-appeal . . . for low cost color coding of finished parts.

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

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INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD

Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ASP Plating Chemicals.

In This Issue

Analytical Determination of Trace Constituents in Metal Finishing Effluents. IV. The Colorimetric Determination of Iron in Effluents by Earl J. Serfass, Ralph F. Muraca and Donald G. Gardner. A colorimetric procedure for the determination of 5 to 50 ppm of iron in effluents is presented. The procedure involves a preliminary treatment to remove organic materials and an extraction of the iron content from the sample by the use of isopropyl ether. After reduction of the iron, the addition of ortho-phenathroline causes the formation of a strongly colored orange-red complex, the intensity of which is measured with a colorimeter. The procedure can be shortened when the amounts of elements other than iron are known or can be estimated.

Joint Strength Properties of Tin-Lead Alloy Deposits by Vincent P. McConnell is a paper that discusses the various processing factors that affect the strength of joints formed by the heat fusion of plated solder alloy coatings on both steel and aluminum basis metal parts. For steel, there are listed, effects of joining temperatures, fluxes, thickness of plated solder alloy, composition of Sn-Pb in the alloy, and of aging of the plated alloy. For aluminum, there are described, the effects of joining temperatures, fluxes, thickness of the zincate film, and thickness of a copper plate.

Management Problems of the Metal Finishing Shop by Bruce E. Warner. The author discusses the causes of management problems in a plating shop. Listed are financial, organizational and problems resulting from employee attitudes. Ways are explored to help eliminate some of the causes of these problems.

AES Research Project No. 4. Effect of Surface Finishing of Nonferrous Base Metals on the Protective Value of Plated Coatings by G. J. Kahan, W. W. Macchia and J. M. Fairbank. This is the first part of the work carried on by the Project to extend to nonferrous metals (rolled brass and zinc die castings), the work done at the National Bureau of Standards on steel. The finishing methods that were employed on brass are described in this installment in detail. The concluding part, covering the work on zinc die castings, will appear in the next issue.

For page numbers, see Table of Contents, page 629

Published monthly at 5800 N. Marvine St., Philadelphia 41, Pa. Entered as second class matter July 1, 1946, at the Post Office at Philadelphia, Pa., under Act of August 24, 1916. Subscriptions: Domestic and Canada, $4.00 for 1 year, $7.00 for 2 years 50c per copy; Foreign, $8.00 per year, $1.00 per copy

Industry News

Wyandotte Chemicals District Sales Managers Plan Expanded Service. Robert J. Racine, Manager of Industrial Sales for Wyandotte Chemicals, Corp., recently outlined plans to the Company's 17 district sales managers for expanded customer service. Racine was a featured speaker at Wyandotte Chemicals' annual district sales managers' conference.

In addition to describing several new industrial products for water wash spray booths and for preparing metal for painting, Racine told of Wyandotte's expanded manufacturing facilities for floor absorbent.

New solution testing devices, expanded advertising and additions to Wyandotte's service staff also were announced.

"Automation" by Norton Company. "Automation" is one of today's liveliest topics of conversation among businessmen and engineers. The word itself is a recently coined one and there are several definitions of just what it means. As it is accepted by some, automation means performing operations and handling work between operations without human labor.

Precision grinding has resisted efforts at automation up to now because it has not been possible to obtain the close tolerances required of mating parts without human attention.

At the present time, Norton Co. is building two transfer crankpin grinders that have been designed to mechanize all the manual duties of the operator as well

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Complete charge plating department, all types of plating (Barrel, still, and automatic), analyze solutions. Commercial and specification work. 12 years' experience job shop and manufacturing. *Reply to:*

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need a finish that blocks corrosion by itself—or under paint? *specify* IRIDITE

You can solve any problem of non-ferrous finishing . . . maximum corrosion protection . . . sparkling clear or colored decorative finishes, firm and lasting base for paint . . . with these two words—"specify Iridite". For example—

- **ON ZINC AND CADMIUM** you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.
- **ON COPPER . . .** Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.
- **ON ALUMINUM** Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.
- **ON MAGNESIUM** Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

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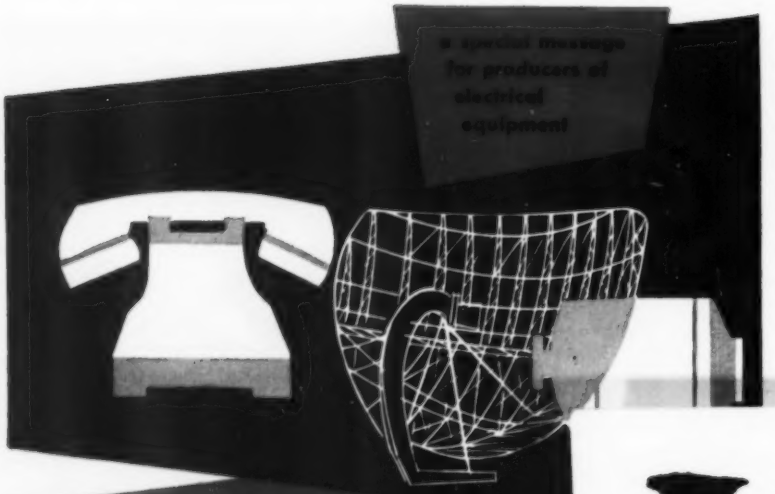

need a finish that blocks corrosion, maintains conductivity?

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Here's peak corrosion protectio
conductivity, weldability and sol
a finish that holds paint firmly, p
corrosion. Here's a line of attrac
to add quality and sales-appeal.
and here's how you can use it:

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Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ASP Plating Chemicals, [illegible] A. H. Rubber Co.

as incorporating the most advanced equipment for accurately grinding the crankpins automatically. In addition to the actual motions involved in loading and unloading and grinding the crankpins, an important feature of the Norton grinder is automatic truing of the grinding wheels at predetermined intervals—that is after each grind or any number of grinds as may prove most economical.

J. Holland & Sons Moves to Larger Quarters. J. Holland & Sons, Inc., manufacturers and distributors of metal finishing equipment since 1904, announce that they have begun moving into their new home at 475 [illegible]

WA
PAG

Research Associate in Metallurgy at M.I.T.; W. Z. Friend and F. L. LaQue of the International Nickel Co., Inc.; L. F. Sudrabin of the Electro Rust-Proofing Corp.; R. M. Burns of the Bell Tele-

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Eastern supply company desires man for supervision of their laboratory and service within production plants. Must have good chemical background coupled with experience in electroplating and related fields. *Reply to:*

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phone Laboratories; and Professor Norman Hackerman of the Department of Chemistry, University of Texas. Further information and application blanks are available from the Summer Session Office, Room 7-103, M.I.T., Cambridge 39, Mass.

L. H. Butcher Co., Udylite Corp., Subsidiary Presents New Facilities. Recently, the L. H. Butcher Co. held open house to the metal finishing industry on

VY

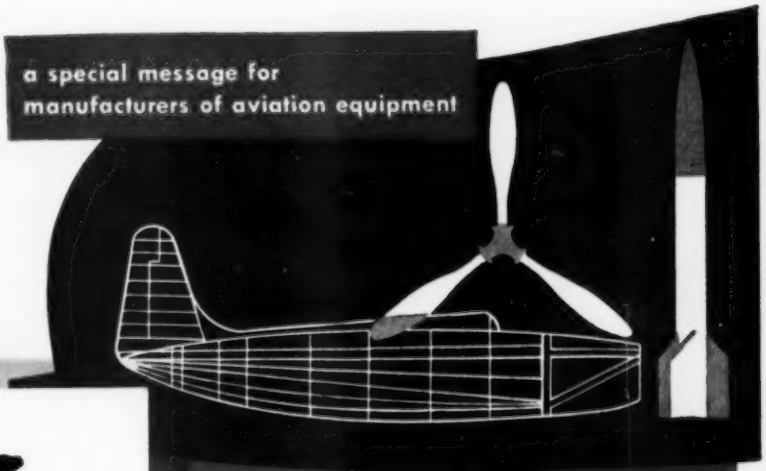
ES

logical product grouping, better customer service and a suitable pattern of organization for expected future growth, the Pennsylvania Salt Manufacturing Co. will establish 2 new operating divisions.

These new components—the Industrial Chemicals and Chemical Specialties Divisions—will function as complete operating units responsible for both the manufacture and sale of their respective products. Other units already operating on this basis are the Pennsylvania Salt Manufacturing Co. of Washington, Sharples Chemicals, Inc., the Pennsalt International Corp.

Three major personnel appointments also were announced: William P. Drake, vice-president in charge of sales, was named president of the Industrial Chemicals Div.; Albert H. Clem, general sales

a special message for manufacturers of aviation equipment



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finish that combines corrosion resistance and rence with extreme ease of application. It can or soldered with no difficulty and presents no "patching" scratches, marks or scraped ere's what you can do with Iridite:

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. . Iridite brightens copper, keeps it tarnish- ts you drastically cut the cost of copper- ing by reducing the need for buffing.

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EASY TO APPLY. Goes on at room tempera- brush or spray. No electrolysis. No special No exhausts. No specially trained opera- dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

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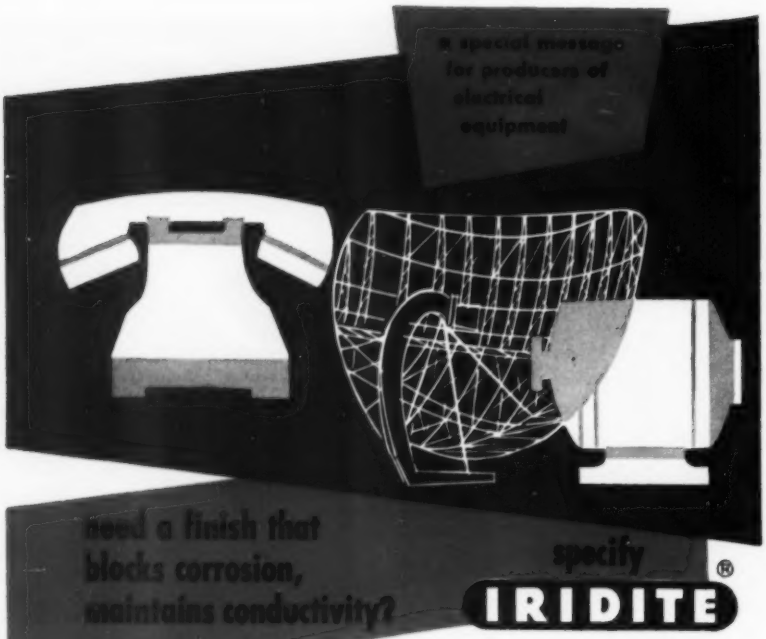
WEST COAST LICENSEE: L. H. Butcher Co.



need a finish that blocks corrosion, maintains conductivity?

specify IRIDITE®

Here's peak corrosion protection combined with conductivity, weldability and solderability. Here's a finish that holds paint firmly, prevents underfilm corrosion. Here's a line of attractive final finishes to add quality and sales-appeal. Here's Iridite . . . and here's how you can use it:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

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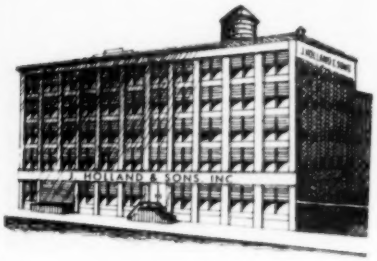

The new 110,000 square foot modern manufacturing plant is located in the heart of industrial Brooklyn, a short distance from the present Holland building. The new plant will house one of the largest stocks in the industry, and includes a spacious parking lot for Holland customers.

Summer Course in Corrosion. A special 1-week summer program in Corrosion, to summarize the fundamental and recent advances in this field, will be given at the Massachusetts Institute of Technology during the 1954 summer session, from June 21 to 25, 1954.

Dr. Herbert H. Uhlig, Professor of Metallurgy, will be in charge of the summer program. Special lecturers, in addition to Uhlig, will include Milton Stern, Research Associate in Metallurgy at M.I.T.; W. Z. Friend and F. L. LaQue of the International Nickel Co., Inc.; L. F. Sudrabin of the Electro Rust-Proofing Corp.; R. M. Burns of the Bell Tele-

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the Pacific Coast. An overwhelming crowd of 600 inspected the new $250,000 research and control laboratory, plating pilot plant, as well as the new manufacturing facilities for the manufacture of metal finishing equipment, rectifiers, polishing and cleaning compounds, cleaners and processing chemicals.

Enthone, Inc., Licenses MacDermid, Inc., for Sale of Metal Stripping Compounds. Enthone, Inc., 442 Elm St., New Haven, Conn., has announced that it has granted a license to MacDermid, Inc., Waterbury, Conn., under the Springer and Meyer Patent No. 2,649,361 assigned to Enthone, Inc.

This patent covers a process for the nonelectrolytic stripping of nickel and other metals. MacDermid, Inc., now is licensed to sell compounds for use in this process.

Pennsalt Chemicals Creates New Operating Divisions. To provide more logical product grouping, better customer service and a suitable pattern of organization for expected future growth, the Pennsylvania Salt Manufacturing Co. will establish 2 new operating divisions.

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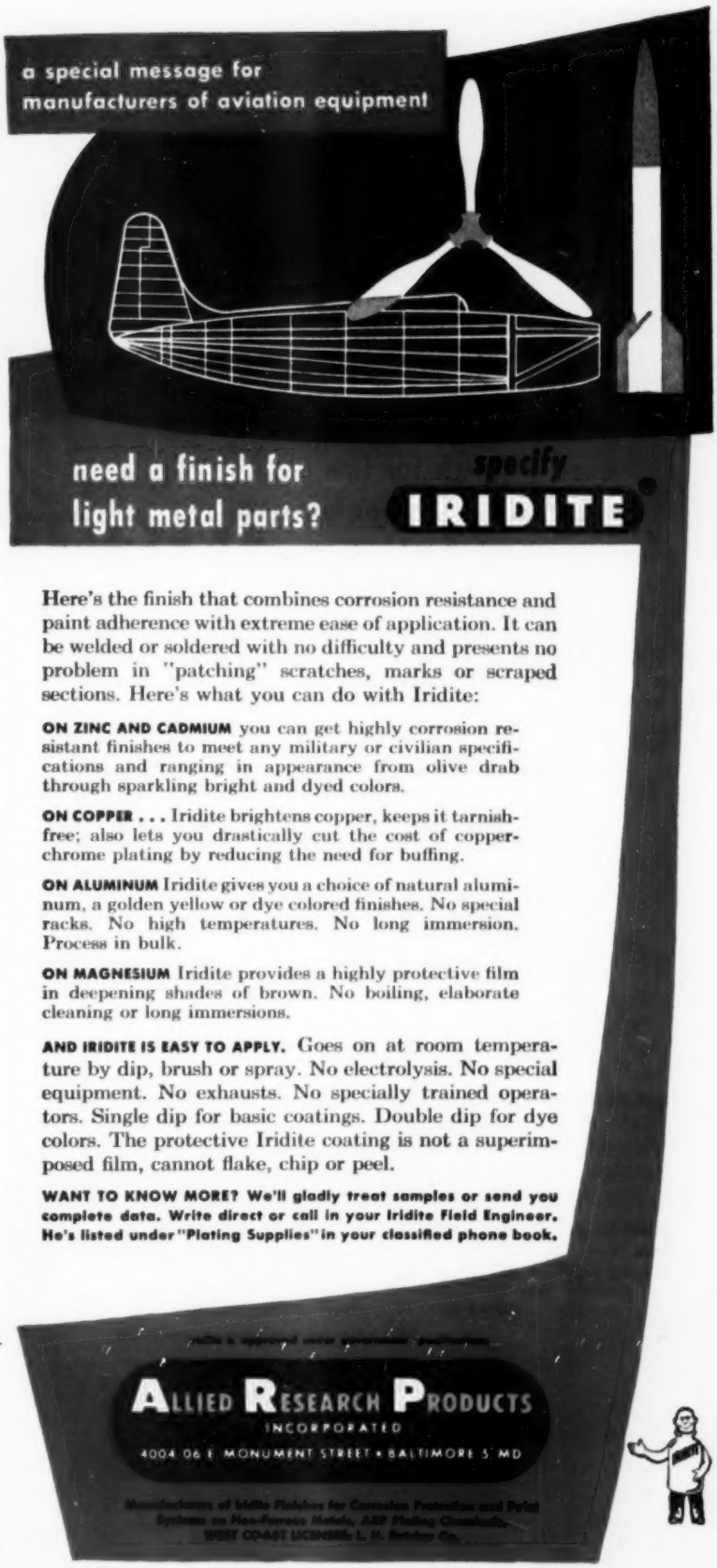
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manufacturers of aviation equipment
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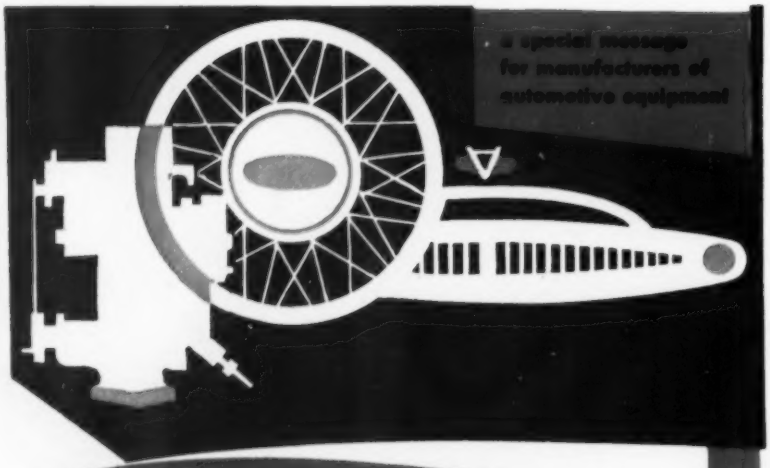

need a finish for low cost corrosion protection or showroom sparkle?

specify IRIDITE

Whether you're finishing non-ferrous parts for high corrosion protection, paint base, or for showroom sales appeal, you can be sure of low material and production costs and peak performance when you specify Iridite. Here's what you can do with Iridite:

- **ON ZINC AND CADMIUM** you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.
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WEST COAST AGENTS: E. M. Sutcliffe Co.

manager, becomes president of the Chemical Specialties Division; and William F. Mitchell, formerly head of Pennsalt's manufacturing activities, becomes vice-president in charge of engineering, purchasing, and traffic for the consolidated company.

Michigan State Alumni To Meet. Michigan State College alumni in the electroplating field are planning a breakfast-reunion in connection with the annual meeting of the American Electroplaters' Society, to be held in New York City during July. All former students of Professor Ewing are invited, together with other alumni who are interested in the electrodeposition of metals.

Announcements will be sent later to all Michigan State alumni known to be in this field, but since such lists are necessarily incomplete, requests for further notification should be sent in promptly. Reunion plans are being handled by C. Fred Gurnham, Head of the Department of Chemial Engineering, Michigan State College.

New Building for American Electro Products, Inc. American Electro Products, Inc., 1358 Thomaston Ave., Waterbury, Conn., originator of the "Cantavone" electroplating processes and techniques, has completed construction of a wing which more than doubles the production capacity of its former plant. The new building features the latest equipment available in the electroplating industry.

Under the Cantavone processes, intricate precision components in the fields of electronics, radar and communications are electroplated in volume with precious or common metals at rigidly controlled tolerances and at lower cost than conventional methods.

The company is presently plating precision components for numerous industrial and government applications, with chief emphasis on the use of gold and silver.

EDITOR, TECHNICAL PUBLICATION

Technical magazine in New York City vicinity with international circulation desires full time editor, over 32 with at least 3 years' editorial experience. Must have working knowledge of chemistry, metal finishing, and allied fields. Should know equipment and materials in field. Must be imaginative and aggressive. Ability to write "nontechnical" articles important. Salary commensurate with ability and experience. Send resume. *Reply to:*

P-654-C, PLATING
445 Broad St., Newark 2, N. J.

New Wire Probe. This wire probe, 1/30th as thick as a human hair, is used at the General Electric Research Laboratory to detect thin films which interrupt electrical contacts between metal surfaces.

The probe sometimes replaces difficult chemical methods of analyzing tarnishes, oxidation films and finger prints. It also has opened a broad field of study for scientists who wish to find out why certain contacts will conduct electricity at times but later do not.

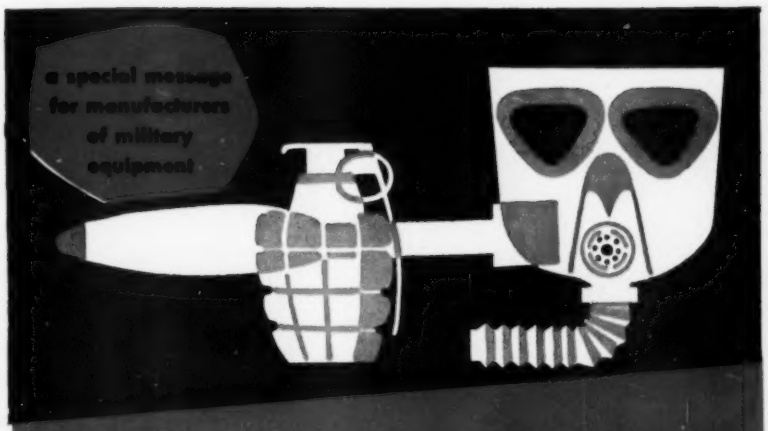
New Oakite Technical Service Representatives. Oakite Products, Inc., have announced the assignment of the following new technical service representatives:

Malcolm N. Gray, to the Lincoln, Nebr., area; John N. Lee, Miami, Fla.; Kenneth L. Oliver, Fort Wayne, Ind.; Thomas D. Ellsworth, Grand Rapids, Mich.; D. O. Mundale, Asheville, N. C.; Haskell Wilder, LaCrosse, Wisc.; Lloyd W. Kagley, Knoxville, Tenn.; William D. Hudson, Topeka, Kans., and Henry W. Dieter, Youngstown, Ohio.

DeVilbiss Announces New Film. Spray painters and others interested in spray painting will find a wealth of information in a black and white 16 mm. sound film, "Making the Most of the Spray Painting Method," which has been produced by the DeVilbiss Co., Toledo, Ohio.

The film, which is a 45 minute feature, illustrates the four basic principles of spray finishing. These are: proper equipment, control factors important to achieve highest quality results, spray painting techniques, and the necessary care, cleaning and maintenance of equipment.

Water Purification Method. Adapting an age-old principle to modern techniques, Salem-Brosium, Inc., 248 Fourth Ave., Pittsburgh 22, Pa., has introduced a new water purification method which is called the Hyla Process. It is a catalytical



need a finish to beat these specs?

specify IRIDITE

AN-C-170 MIL-S5002 MIL-C-5541 AN-P32
AMS-2402A USA-50-80-11A J.Q.D. No. 144B
USA 57-93-2A O.S. No. 1374 USA 57-0-2C AN-P61
A-XS-1607 QQ-P-416 QQ-Z-325 MIL-3151 —
if you're finishing under these or similar specifications, here's how you can use Iridite:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD

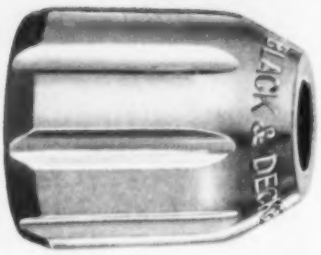
Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals, ASP Plating Chemicals

FOR FURTHER INFORMATION, USE READER SERVICE CARD; INDICATE A 608.

now

you can get this brilliant finish directly on zinc die castings!

PART AS CAST



TREATED WITH NEW IRIDITE

No electroplating--no mechanical finishing!

NEW

IRIDITE® (Cast-Zinc-Brite)

brightens zinc die castings by chemical polishing, protects against corrosion

NOW, FOR THE FIRST TIME you can get a brilliant, decorative finish directly on zinc die-cast parts . . . without mechanical finishing, without electroplating! The luster is provided by the *chemical polishing* action of new Iridite (Cast-Zinc-Brite) solution. Even surface blemishes, such as cold shuts, are brightened by this new process. No electrolysis. No special equipment. No specially trained personnel. Just a simple chemical dip for a few seconds and the job is done. And, this new Iridite has been *tested and proved* in production.

CORROSION RESISTANCE, TOO! New Iridite (Cast-Zinc-Brite) provides exceptional corrosion resistance for bright-type chromate finishes . . . also guards against blueing or darkening by eliminating zinc plate formerly required in bright chromate finishing of zinc die castings.

AS A BASE FOR ELECTROPLATING—Lower mechanical finishing costs are possible where plated finishes are *required* since the brightness provided by this new Iridite may be sufficient.

LET US SHOW YOU what Iridite (Cast-Zinc-Brite) can do for you. Send us at least a half-dozen typical zinc die-cast parts for FREE PROCESSING for your own tests and evaluation. Or, for immediate information, call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified 'phone book. *IMPORTANT: when you give us samples for test processing, please be sure to identify the alloy used.*

Iridite is approved under government specifications

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD.

Manufacturers of Iridite Finishes for Corrosion Protection and Paint Systems on Non-Ferrous Metals; ASP Plating Chemicals

technique employing complex metal salts that perform a variety of known functions. All the research so far, which has been conducted by Johns Hopkins University in Baltimore, has dealt with water purification.

In water purification, the Hyla material consists of complex silver salts deposited on a common carrier material.

The university research, which started more than two years ago, and is continuing, showed Hyla kills bacteria as effectively as any known purification treatment and has distinct advantages. They include residual kill, great physical simplicity and the elimination of odors and taste.

Diamond Alkali Appointments. Appointments to 6 new sales and research managerial posts in Diamond Alkali Company's newly formed Chlorinated Products Division were announced recently.

Already having assumed their new assignments, these men are:

Dr. D. J. Porter, formerly assistant to the director of research, becomes assistant general manager and division research director.

Dr. J. J. Lukes, formerly development section manager, was named research manager and will assist Dr. Porter in carrying out divisional research responsibilities and functions.

W. B. Beeson, Jr., sales manager since June, 1953, of Belle Alkali Co., Belle, W. Va., a Diamond subsidiary, becomes product sales manager for Diamond chemicals manufactured at the Belle plant as well as the company's other chlorinated solvents, including perchlorethylene and carbon tetrachloride, and hydrochloric acid.

W. J. Esselstyn, formerly a technical service representative, becomes solvents sales manager, working with Beeson.

M. T. Welsh, a sales promotion representative since 1951, was named sales manager in charge of Chlorowax and related products.

D. C. Nevling, plant auditor at Diamond's Houston Works for the past 5 years, moves up to the position of divisional administrative assistant.

Appointees to these new positions will be located in Cleveland with the exception of Dr. Lukes, who will carry on his work at the Diamond Technical Center in Painesville.

H-VW-M Expands Western Sales and Service Force. Hanson-Van Winkle-Munning recently purchased the electroplating equipment and supply division of A. J. Lynch Co., Los Angeles. The Lynch plating division formerly represented H-VW-M in California. H-VW-M, however, is using its newly acquired facilities and personnel to extend sales and service coverage from California to Washington, Oregon, Idaho, Nevada, Utah,

The 110,000 square foot modern manufacturing plant above is the new home of J. Holland & Sons, Inc. It was built to serve you better.

- **WE OFFER YOU** an extensive and varied stock of finishing products *on the floor.*
- **WE OFFER YOU** immediate delivery.
- **WE OFFER YOU** the technical and engineering help you may need for your *individual* problems.
- **WE OFFER YOU** the most modern, streamlined operation in the industry; all your finishing needs from a single source; efficient service; superb quality; fair prices; *even free parking in our adjoining lot!*

Why not visit us soon and see for yourself the finest in:

POLISHING	PLATING	SPRAY PAINTING
Polishing Machines	Rectifiers	Spraying Machines
Grinding & Strapping Equipment	Generators	Baking Ovens
Tumbling Barrels	Plating Units	Spray Booths
Exhaust Systems	Coils	Dryers

. . . and over a thousand other products comprising one of the largest stocks in the metal finishing industry.

J. HOLLAND & SONS, Inc.
475 Keap Street (corner Union Ave.)
Brooklyn 11, New York

LEADERS IN FINISHING EQUIPMENT FOR OVER A HALF-CENTURY

Industry News

Arizona, New Mexico, Wyoming and Montana.

Headquarters have been set up at the new St. Louis office to service Kansas, Oklahoma, Arkansas, Texas, Louisiana, Missouri and the St. Louis trading area in Illinois. Joseph J. Cizas recently was appointed sales representative for the territory.

Formerly, this territory besides other western states was covered by C. A. Pickering of H-VW-M. Under the new expansion and consolidation plan, Pickering will concentrate his sales activities in Colorado, Nebraska, Iowa and northwestern Illinois. L. J. Moyes, presently covering Wisconsin and Minnesota, will acquire the territories of North and South Dakota. Supervising the areas covered by the three is R. R. Granquist, who maintains his headquarters in Chicago.

Permutit Opens New Metalworking Plant. The latest addition in a series of expansion moves—a projected million dollar building program—was formally dedicated at Lancaster, Pa., by the Permutit Co.

This new addition, a modern metalworking plant, is the preliminary step to the eventual creation in Lancaster of a complete industrial center for the manufacture of several of the company's varied products for industry and home.

This latest move into Lancaster was made to consolidate two similar operations and activities in Brooklyn, N. Y., and Philadelphia, Pa., and follows by only a few months the opening of a new hydraulic laboratory and pilot plant at Birmingham, N. J.

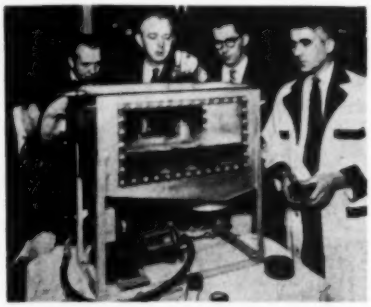
Instruction for Corrosion Engineers. Atlas Mineral Products Co. announces that it will hold 2 week-long sessions of instruction for corrosion engineers in 1954. The exact dates have not been set but one course during the month of September.

These courses, which were inaugurated a year ago, stress selection, design, testing and application of plastic materials of construction.

Further information may be secured by writing Joseph A. Snook, Vice-President, Atlas Mineral Products Co., Mertztown, Pa.

Ultrasonic Cleaning Demonstrator Team. The Detrex Corp. of Detroit has "taken to the road" to tell American industry the story of the remarkable advances made in the use of ultrasonic energy for the precision cleaning of metal.

It was just a year ago that Detrex announced that it had taken high-frequency sound energy out of the laboratory stage and had developed its fully conveyorized Soniclean Process—its ultrasonic metal cleaning system that was practical for the needs of modern industry.



Inquiries and requests for further data and demonstrations have poured in "literally by the thousands"ever since.

To answer this flood of inquiries, Detrex now announces the added formation of a special team of ultrasonic demonstrators and the preparation of an itinerary that will keep them on the road for an indefinite period.

Headed by Kermit D. Collom, in charge of ultrasonics sales, installation and service, the demonstrators will show ultrasonics in action with the aid of a carefully assembled, complete kit.

AVOID COSTLY REJECTS DUE TO UNACCEPTABLE COATING THICKNESS!

For quality control and acceptance tests, measure thickness of coatings on metals the easy, accurate, non-destructive way, with the . . .

AMINCO BRENNER **MAGNE-GAGE**

Widely used by industry and government for accurately measuring the thickness of:

1. Non-magnetic coatings (metallic or non-metallic) on magnetic base metals.
2. Nickel coatings on magnetic or non-magnetic base metals.
3. Composite copper-nickel coatings on magnetic base metals.

Measures coatings on plane, convex or concave surfaces. Gives speedy and accurate results. Easy to use by non-technical personnel.

Coating on cylindrical object being measured with the Magne-Gage.

Avoids expensive rejections due to coatings that may be too thin, or non-uniform. Eliminates the expense involved in replating or discarding specimens spoiled by destructive tests . . . every piece tested is unharmed and ready for use or shipment. Saves materials wasted by coatings thicker than necessary. Its use leads to the discovery of faults that may exist in plating methods or equipment.

Write for Bulletin 2150-Y

AMINCO Laboratory Instruments

AMERICAN INSTRUMENT COMPANY, INC.

Silver Spring, Maryland • In Metropolitan Washington, D. C.

Automatic feed speeds this polishing job

Another OUTSTANDING ABRASIVE BELT *Application*

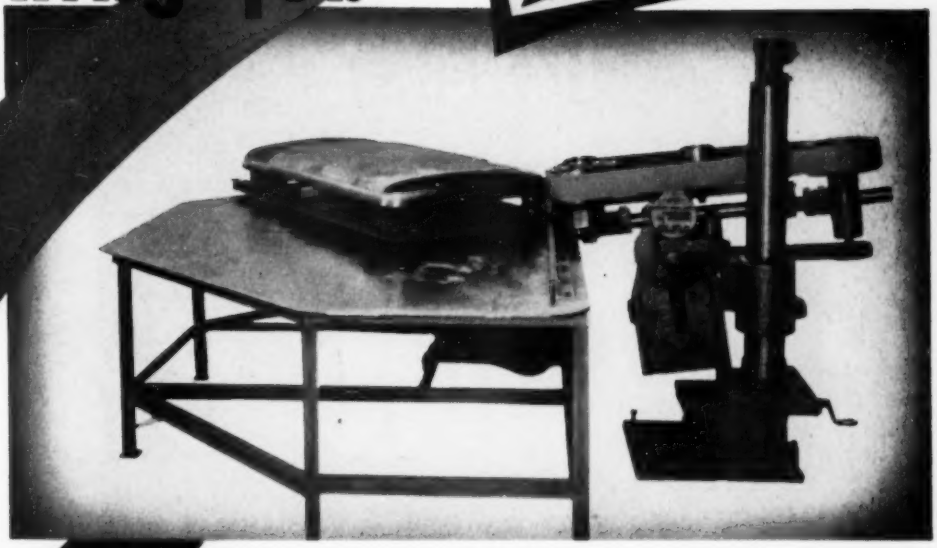


Photo courtesy of Acme Mfg. Company

REMOVING DRAW MARKS ON REFRIGERATOR DOORS goes with cost-cutting speed on this ACME Roller Feed table. The spur-driven roller chain constantly feeds the work into and past the BEHR-MANNING METALITE® Belt on the ACME Polishing Head Unit. The operator simply controls the angle of the polishing head, letting the work take care of itself. A uniformly smooth, good-looking job results, with an output that makes an equally good-looking cost sheet.

Just one more case where BEHR-MANNING® Abrasive Belts, in their amazing versatility, adapt themselves to ever new, faster, better polishing and finishing methods. Why not try out the latest methods on your own work, in your nearest BEHR-MANNING Demonstration Room? Make a date now. Behr-Manning, Troy, N. Y., Dept. PL-6.

In Canada: Behr-Manning (Canada) Ltd., Brantford.
For Export: Norton Behr-Manning Overseas Inc.,
New Rochelle, N. Y., U. S. A.

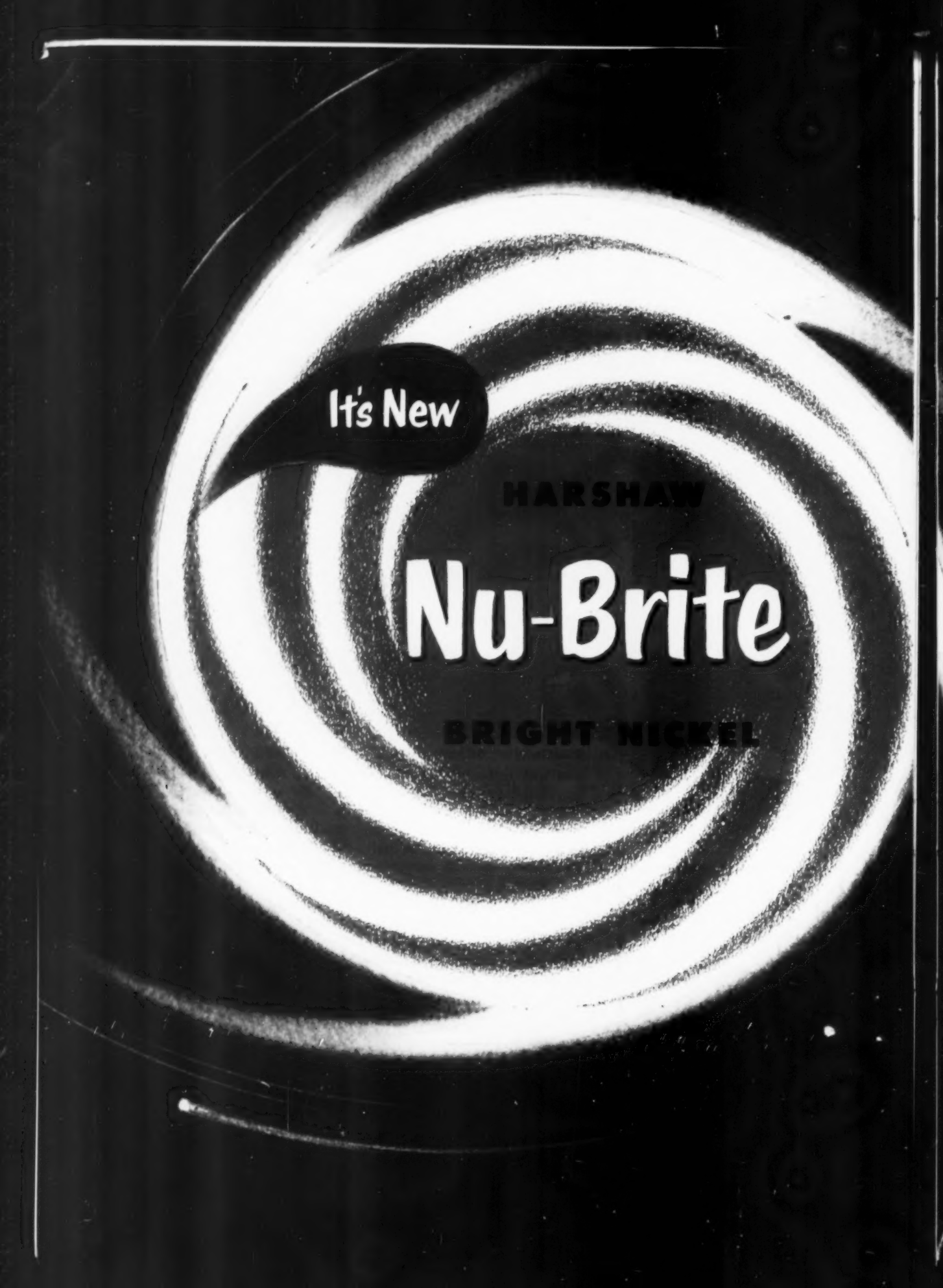
For interesting data on new belt applications, write for the booklet, "How Polisher Pete Put Economy in Polishing."

BEHR-MANNING® CORPORATION *division of NORTON Company*

P-4

▲ COATED ABRASIVES ▲ SHARPENING STONES ▲ PRESSURE-SENSITIVE TAPES

For the newest in coated abrasives . . . watch BEHR-MANNING!


It's New
HARSHAW
Nu-Brite
BRIGHT NICKEL

Top brightness with thin deposits. Extremely tolerant to common metallic impurities. Simple control with liquid addition agents. Superior chrome acceptance beyond normal time delays. Excellent leveling results in decreased polishing costs.
For application in your plant, phone or write our nearest office.
THE HARSHAW CHEMICAL COMPANY
1945 East 97th Street • Cleveland 6, Ohio
Chicago 32, Ill. • Cincinnati 13, Ohio • Cleveland 6, Ohio • Houston 11, Texas
Los Angeles 22, Calif. • Detroit 28, Michigan • Philadelphia 48, Penna.
Pittsburgh 22, Penna. • New York 17, N. Y.

Personals

C. A. Butler, Jr., director of engineering since 1946 for the Diamond Alkali Co., Cleveland, Ohio, has been promoted to the newly created post of director of commercial development.

Loren Scoville, since 1951, vice-president in charge of engineering, purchasing and operations for Jefferson Chemical Co., New York, N. Y., has been named to take over Butler's work as director of engineering.

Bruce D. Gleissner has been named assistant general manager of the Company's recently established Chlorinated Products Division. He will be concerned chiefly with furthering the commercial development of agricultural chemicals.

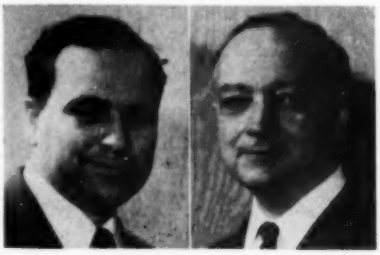
L. J. Polite, Jr., has been promoted to the post of agricultural chemicals sales manager.

Both Gleissner and Polite have assumed their new duties at the company's general offices in Cleveland.

David E. Pierce, nationally known chemical engineer, author and lecturer, has been appointed to the newly created position of director of manufacturing control at Diamond.

In joining Diamond's national headquarters in Cleveland, Pierce leaves New York, where he has operated his own consulting engineering business at 52 Wall St. for the past year.

S. W. Berman has been elected to the position of vice-president and **J. D. Trehy** to the position of treasurer, according to a recent Green Electric Company announcement. Purchasing has been taken over by **J. McGee**, and **L. W. Reinken** continues as president. The



Berman **Trehy**

changes followed the resignation of **E. I. Huppert, Jr.**, who has purchased the Sal-Hyde chemical department of Green Electric and is organizing this as a separate business.

All of the men mentioned above have been with Green Electric since before World War II.

Harold A. Kahler has been named general sales manager of the eastern division by the Promat Division, Poor & Co.

Kahler

After receiving a B.S. degree from Mount Union College, Alliance, Ohio in 1934, Kahler spent 3 years with Republic Steel, Canton, Ohio and Rotary Electric Steel, Detroit, Mich. From 1937 to 1946, he was associated with the Ford Motor Co. Rouge Plant. During World War II, he served as general foreman of laboratories, heat-treat and plating departments, of the Pratt & Whitney Aircraft Division. In 1946, Kahler joined the metallurgical staff of Kaiser Frazer Corp., where he assumed the duties of plating consultant and metallurgical liaison engineer.

Kahler is a member of the AES and served on its Research Project 15. He is also a member of the ASM and the Association of Analytical Chemists.

R. H. Christenson has been appointed sales and service representative of the Chemical Processing Division in the East-Central region by the Detrex Corp. Christenson, a graduate of Purdue University with a degree in metallurgical engineering, has been in the Chemical Processing Division of Detrex for 2½ years.

PERMAG
YOU CAN START RIGHT
EVERY TIME
WITH PERMAG
Cleaning tanks, so important to improved production and faster operation, are the first units in producing uniform work for a uniform plate.
Offering every advantage you seek for this work, PERMAG will leave your job chemically clean without damage to the metal and at a minimum cost for maximum cleaning efficiency.
Our technical service staff will gladly consult with you on any cleaning problem you may have, without obligation.
Write for your FREE Electroplaters' Handy Pocket Size Manual on Cleaning Compounds.
If you have trouble with:
HAZY DEPOSITS,
BLISTERS,
PEELING,
CARRY-OVER,
CORROSION or
SMUT ON STEEL
—let us help you.
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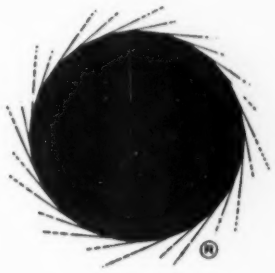
PRODUCTS CORPORATION
50 Court Street • Brooklyn 2, N. Y.
In Canada:
CANADIAN PERMAG PRODUCTS, LTD., MONTREAL

4 Valuable Co-ordinated Services

on Research and Development, Technical Service and Manufacturing

IN THE BROAD FIELD OF FINISHING

BUILT UP AROUND THE NAME



THE LEA MFG. CO., WATERBURY 20, CONN.

the pioneering company and long the leading exponent in problems of polishing and buffing; to distinguish it from the others, the trade is calling it

LEA OF WATERBURY

LEA-RONAL, INC., LONG ISLAND CITY 1, N. Y.

specializing in plating problems and developer of several outstanding bright high speed plating processes and electrochemical specialties; formerly Ronal Chemicals, Inc., it has been serving industry now for more than a year as the following member of the Lea Group

LEA-RONAL

LEA-MICHIGAN, INC., DETROIT 27, MICHIGAN

a two-fold service here; (1) manufacturing a widely used Lea specialty which is sold all over the world; and (2) manufacturing several Lea Products sold in the Detroit and adjacent areas as well as serving the territory in connection with technical problems. It is known as

LEA-MICHIGAN

LEA MFG. CO. OF CANADA, LTD., TORONTO, CAN.

manufacturing several widely used Lea Products, particularly for sale in Canada and British Commonwealth; also staffed to give technical service in connection with plating and finishing problems.

LEA OF CANADA

A summary of services and products available through these four companies is given on the following pages.

Are You Interested In PLATING?

Here's What LEA-RONAL has to offer:

First- Technical Service plus Practical 'Know How' in Electro-deposition. These coupled with our laboratory and research facilities are available to you in connection with your plating problems.

Second- Development of "Products of Research" such as those outlined below to enable your plating department to obtain the best from existing solutions and equipment or to start out with the highest efficiency in new plants. Lea-Ronal well-known, production tested and accepted processes and specialties include:

LEA-RONAL BRIGHT COPPER . . . a bright high speed cyanide copper solution giving soft ductile deposits for use with steel or die castings. With this copper the bright nickel deposit can be cut to a minimum because the nickel is not needed to build 'brightness'.

LEA-RONAL BRIGHT SILVER . . . using LEA SILVER-GLO, produces mirror-bright (with sodium) and bright (with potassium) deposits; both plated from clear, colorless solutions at high current densities; no brightener breakdown.

LEA-RONAL BRIGHT GOLD . . . for decorative and industrial use. Bright Gold 'A' produces brilliant alloyed gold colored deposits. Bright Gold 'S' produces smooth bright coatings for industrial use.

PLUS

the manufacture and sale of effective and already widely used Addition Agents and Specialties, such as:

SUPERTARTRAL . . . a superior and more economical substitute for rochelle salts; can be used in any cyanide copper bath to give better anode corrosion, cyanide stability, tolerance to metallic impurities; saves 20-25% in cost over rochelle salts.

LEA NICKEL GLO . . . an addition agent for barrel nickel plating solutions, producing bright plated surfaces and finer deposits of metal; no sludge; possible to eliminate burnishing of small articles.

LEA MIRROR-GLO . . . an organic type brightening agent for room temperature still tank nickel plating solutions.

LEA BRIGHT CADMIUM PROCESS . . . produces bright protective cadmium electrodeposit for use on both ferrous and non-ferrous metals.

WATERSHED . . . liquid rinse aid which promotes free rinsing and fast drying, hence reduces staining and spotting of plated pieces.

SPRAY STOP . . . a liquid producing a foam blanket on chrome plating baths, eliminating dangerous mists and sprays.

WETTING AGENT CW-6 . . . a stable free rinsing wetting agent for all cyanide copper baths including Lea-Ronal; increases tolerance to organic contamination.

TST PURIFIER . . . brings about remarkable increase in tolerance to chromium and zinc in cyanide copper baths, particularly when used in conjunction with SUPERTARTRAL.

CUPRAL . . . addition agent for cyanide copper plating solutions helping to increase speed of deposition and buffability of deposits, particularly effective where mirror-bright deposits are not required.

PLUS

these recent new developments

LEA-RONAL 'SUPERLEVEL' BRIGHT ACID COPPER (using LEA-RONAL COPPER GLEAM) . . . a remarkable agent for leveling high speed soft, bright acid copper; can reduce surface roughness by 80%; helps to reduce polishing costs; very stable.

LEA-RONAL NICKEL GLEAM . . . a different Bright Nickel Process using LEA-RONAL Nickel Gleam offering high tolerance to (a) zinc and copper impurities and (b) current interruption without producing 'double plate'; excellent brilliance and leveling without sacrifice of throwing power of solution or ductility of deposit; deposits not passive and easily chromium plated; users are forming articles after 0.0005" of bright nickel without cracking or peeling of deposit.

L-R

LEA-RONAL, INC. • Main Office & Laboratory 42-48 27th ST., L. I. C. 1, N. Y. • Manufacturing Plant 237 E. AURORA ST., WATERBURY 20, CONN.

SATIN FINISHING? POLISHING? Are you interested in... BURRING? BUFFING? LAPPING? LIQUID SPRAY BUFFING?

Here is what LEA OF WATERBURY offers:

First- **Technical Service in connection with all types of finishing in the above types of operations. A renewal of trade interest in Satin Finishing recalls that the development of this excellent finish, making use of Lea Greaseless Compound, was a Lea Development. New techniques in connection with this finish are available.**

Second- **Extensive line of thoroughly proved, effective Finishing Specialties, including:**

LEA COMPOUND . . . industry's pioneering greaseless composition for burring, buffing, satin finishing, and flexible polishing; contains abrasives ranging from sharp, fast-cutting grits to fine, soft powders for delicate finishes.

LEAROK . . . compositions with "no free grease" designed primarily for buffing or coloring pieces which involve cleaning difficulties; does not pack up in recesses and ornamentations.

AD-LEA-SIVE . . . glue-base adhesive for sizing, buffing and polishing wheels prior to application of Lea Compound, or loose abrasives; available in bar form or bulk.

LEABRAMENT . . . greaseless, non-flammable, quick-drying, liquid abrasive for burring and polishing; can be sprayed or brushed on wheels.

LEA LIQUABRADE . . . clean-working, fast-cutting and mirror-finishing liquid buffing compounds, providing in effect continuous operations and substantial economies in compositions and buffs; clean and safe, non-flammable, non-explosive; many abrasive types and grain sizes for all non-ferrous metals, steel, stainless alloys, and plastics.

LEA SPRAY GUN MOVER . . . air-actuated machine for mounting automatic spray gun; sprays liquid buffing compositions uniformly on wide face buffing wheels.

LEA LIQUALUBE . . . water soluble liquid lubricant for polishing wheels and belts; can be sprayed or brushed on.

LEA LUBAR . . . bar form lubricant for polishing wheels and belts where glazing is not a problem.

cLEAn GRAIN LUBAR . . . special bar form lubricant to eliminate glazing or polishing wheels and belts.

LEA LAPPING PASTE . . . micron size controlled abrasive paste for accurate and fine surface finishing.

LEA COPPER-GLO . . . (with LEA-RONAL Bright Copper Process). See Page 2 of this insert for details of this process.

LEA KROMESAVERS . . . mist preventive for chrome and other plating solutions.

cLEAn-FLO . . . machine for filtering alkaline and acid plating solutions without need of filter aid.

LEATARDENT . . . anti-stain dip emulsion; prevents staining and tarnishing of plated surfaces.

LEA LECTROMAG . . . portable electrical instrument for measuring the thickness of non-magnetic coatings on carbon steel and iron.

LEA SYNSTRIP . . . high speed stripper for synthetic enamels; leaves non-ferrous surfaces smooth; no etching.

LEA ANALYTICAL METHODS . . . plater's short cut methods for analyzing plating solutions.

For further information on any of the above items and for Technical Service, write or call

THE LEA MFG. CO., 16 CHERRY AVENUE, WATERBURY 20, CONN. • PHONE WATERBURY 3-5116

DETROIT

Here's what LEA-MICHIGAN has to offer:

Excellent manufacturing facilities which means ready stocks and prompt deliveries of Lea Copper-Glo and Lea Liquabrade Spray Buffing Compounds.

Lea-Michigan can be reached at 14066 Stansbury Avenue, Detroit, Michigan and by phone — Broadway 3-3600.

And no matter where you are located--

You can get from Lea-Michigan one of the best polishing wheel and polishing belt cements ever put on the market:

GRIPMASTER®

This cement has exceptionally high bonding strength and provides longer operational wheel and belt life in finishing both ferrous and non-ferrous materials.

CANADA

BRITISH COMMONWEALTH?

Lea Mfg. Co. of Canada is ready to serve you with both technical service and prompt delivery of several Lea Finishing Specialties made in Canada, including:

- **Lea Compound**
- **Learok**
- **Lea Liquabrade**
- **Leabrament**
- **Ad-Lea-Sive**
- **Lea Liqualube**
- **Lea Lubar**
- **cLEAn Grain Lubar**

You can reach Lea of Canada, Ltd., at 370 Victoria Street, Toronto 2, Canada Phone *EMPIRE* 4-8105

The BIGGEST Time and Money Savers in Plating Rack History!

Racks for any job when you need them.
No delay—no waiting.

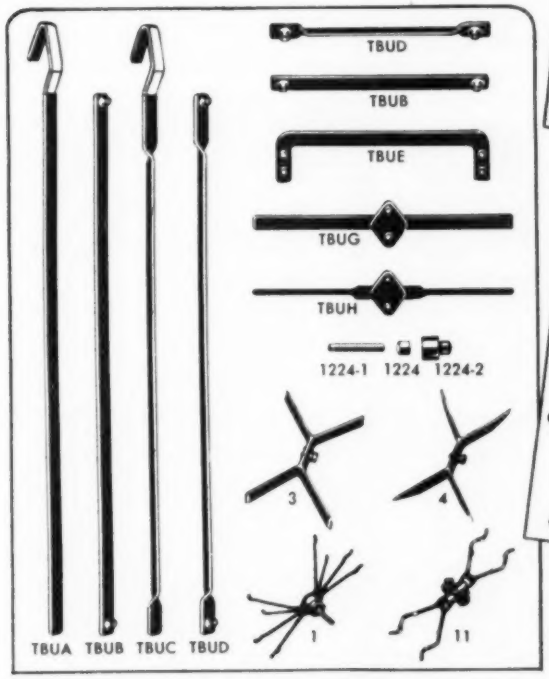
Quick and easy conversion.
Racks easily changed to fit different jobs—you can have top efficiency on every job.

Replaceable Tips for easy tip upkeep.
Enable you to keep every rack at full capacity.

Tremendous saving in plating rack costs.
You can make new racks designed for the job from members of discarded Thinker Boy Racks at the mere cost of assembly.

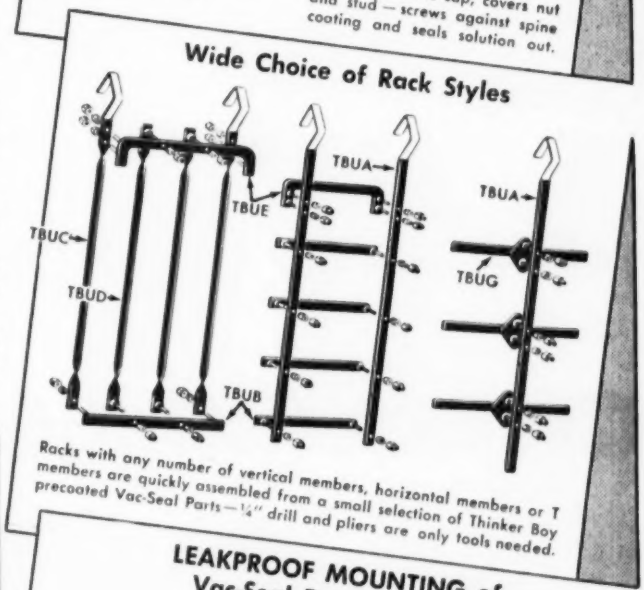
No added investment necessary. *Here's how you can cash in on the tremendous time and money saving economy of Thinker Boy Racks without investing an extra dime.*

1. When you need racks get *Thinker Boys.* Vac-Seal replaceable tips enable you to keep every Thinker Boy Rack at full capacity.
2. When Thinker Boy Racks of one design are no longer needed, convert them to a design you need or disassemble and store the parts.
3. When you need racks for a different job, assemble them from your stock of used Thinker Boy Parts. You get racks designed for the job in a matter of minutes for the mere cost of assembly.



Thinker Boy Precoated Vac-Seal Parts are mass produced for low cost and carried in stock for prompt shipment. Furnished in any assortment or assembled to your specification. Ask your BELKE Service Engineer or write for descriptive bulletin and parts list.

LEAKPROOF ASSEMBLY of Thinker Boy Precoated Plating Rack Members
Tapered knurled fitting wedges into spine, assures contact — prevents pressure on coating.
Heavy coating of BELKE Universal Plastic.
No tapping — just drill ¼" holes.
BELKE Vac-Seal—joins frame coating with leakproof seal—keeps solution out.
Tapered nut wedges into spine, bears all stresses — avoids injury to spine coating.
Threaded plastic cap, covers nut and stud — screws against spine coating and seals solution out.


Wide Choice of Rack Styles
TBUA
TBUE
TBUC
TBUD
TBUB
TBUA
TBUG
Racks with any number of vertical members, horizontal members or T members are quickly assembled from a small selection of Thinker Boy precoated Vac-Seal Parts—¼" drill and pliers are only tools needed.

LEAKPROOF MOUNTING of Vac-Seal Precoated Tips
BELKE Vac-Seal — joins rack coating with leakproof seal.
Frame and Tip precoated with BELKE Universal Plastic.
No tapping. Just drill ¼" hole.
Tapered nut wedges into spine—bears all stresses—avoids injury to coating.
Knurled shank wedges into frame — cannot twist or turn — assures positive contact.
Threaded Lucite Cap, encloses stud and nut —screws against rack coating and seals solution out.

Belke MANUFACTURING CO.
947 N. Cicero Ave.
Chicago 51, Ill.
EVERYTHING FOR PLATING PLANTS

Personals

Herbert H. Geduld has been designated technical service representative for De-

Geduld

troit and southeastern Michigan by the R. O. Hull & Co., Inc. He will make his headquarters at the George L. Nankervis Co., Detroit distributor, where there is now a new service laboratory for the increasing number of customers in this area.

A native of Cleveland, Geduld attended Fenn College. His experience of 5 years as chief chemist for R. O. Hull & Co., Inc., makes him exceptionally well qualified to service plating plants.

William P. Drake has been named president of the new Industrial Chemicals Division of the Pennsylvania Salt Mfg. Co.

In his new capacity, Drake will be responsible for both the manufacture and sale of Pennsalt's extensive line of industrial chemicals. Other major operating divisions of the consolidated company are: Chemical Specialties Division; Pennsylvania Salt Mfg. Co. of Washington; Sharples Chemicals, Inc.; and Pennsalt International Corp.

Drake joined Pennsalt in 1934 as a student trainee while still enrolled in Bowdoin College. Following completion of training, he served successively as salesman, sales supervisor, product sales manager and general sales manager. In 1949, he was elected a vice-president of the company.

Also announced were the appointments of other key personnel in the Chemical Specialties Division.

Paul C. Hurley, manager of advertising, will be responsible for advertising, sales promotion and market research.

E. S. Garverich will serve as technical director in charge of technical service and product development.

Richard O. White, formerly superintendent of Pennsalt's Montgomery, Ala., plant, has been named production manager, in which capacity he will direct the manufacturing activities of the new division.

Joseph S. McCulloch has been appointed manufacturer's representative for the company's Corrosion Engineering Products Department.

In his new assignment, McCulloch will represent Pennsalt as sales engineer for chemicalproof cements, acidproof mortars, chemical resistant membranes, and corrosion resistant coatings. His territory will cover Maryland, Delaware, eastern Pennsylvania and southern New Jersey.

Emil Pieper is the new Buffalo representative for the Frederick Gumm Chemical Co., Inc.

Pieper

Pieper followed courses in engineering at Clemson A&M and the University of Buffalo. He received his B.S. in Industrial Education at New York State College for Teachers at Buffalo.

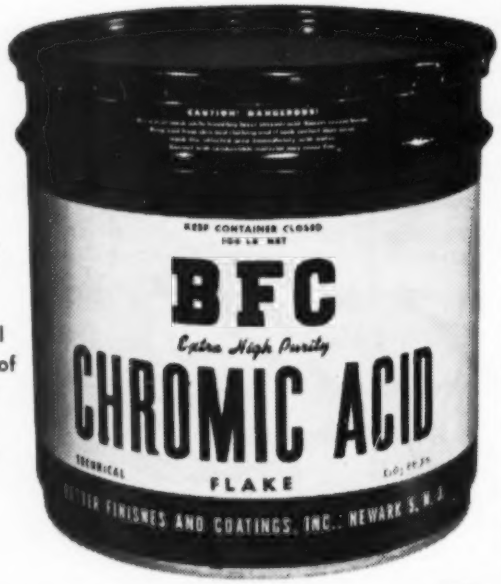
The new representative formerly was employed as a metal finishing development engineer at Trico Products Corp. He is a member of the Buffalo Branch AES.

Paul R. Pariseau has been appointed assistant to President, S. G. Thornbury, Turco Products, Inc., Los Angeles, Calif.

Pariseau's initial duties will be in production matters.

Soon after graduation as a chemical engineer, Pariseau, in 1930, became Chief Chemist of the W. T. Rawleigh Company

99 75+% PURE
CHROMIC ACID
TECHNICAL GRADE—FLAKE



Ownership-management make the difference! We say exactly what we can do... and then do it without alibis or buck-passing. We think you'll like the uniform quality of BFC Chromic Acid and the sing!e-standard-of-service behind it. When you're in the market, why not telephone us at MArket 3-2663?

BETTER FINISHES & COATINGS, INC.
268 Doremus Avenue, Newark 5, N. J. • 122 East 7th St., Los Angeles 14, Calif.

Spray Wash Problems Dogging You?

HARD WATER SCALE IS COSTLY... ESPECIALLY IF IT CLOGS YOUR SPRAY EQUIPMENT. PLAY SAFE! SPECIFY WATER-SOFTENING, FREE-RINSING, QUICK-WETTING DIVERSEY 14, 16 or 519

DIVERSEY 14

Especially made for spray-washing steel. Forms a light alkaline film (if not rinsed) that prevents rust formation for short storage.

DIVERSEY 16

Non-foaming emulsion cleaner with excellent wetting and emulsifying powers. Leaves a light film when not rinsed that prevents rust during inspection or over-night storage. Paint can be applied directly over film . . . no rinse needed. For use on all metals.

DIVERSEY 519

Cleans all metals safely and quickly. Takes high concentration without foaming. Effective on aluminum, steel, copper, brass, zinc and other metals.

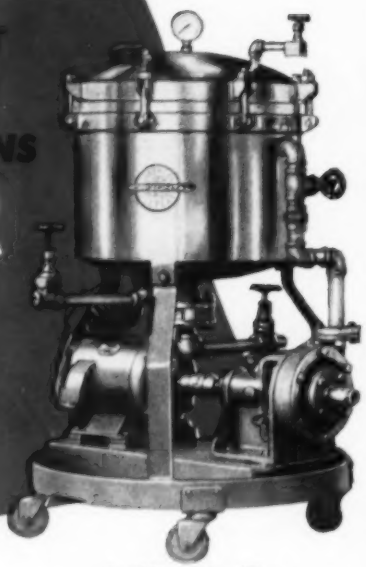
Call Your D-Man

A DIVERSEY D-MAN will be happy to show you the advantages of spray-washing with DIVERSEY 14, 16, or 519. Call him today for complete information or write:

THE DIVERSEY CORPORATION
Metal Industries Department
1820 Roscoe Street • Chicago 13, Illinois
In Canada: The Diversey Corporation (Canada) Ltd., Lakeshore Road, Port Credit, Ont.

FOR LOW COST FILTERING OF PLATING SOLUTIONS

SPARKLER HORIZONTAL PLATE FILTERS



Sparkler Plating Filter
Model 18-D-6 Alliron
600 G.P.H. Portable

HERE'S HOW

★ On a horizontal filter plate it is possible to apply a thin pre-coat with about one-third the filter aid, and in one-third the time required for pre-coating a non rigid media or a surface in a vertical position. This saves time and filter aid.

★ With the Sparkler horizontal plate you can apply this thin pre-coat evenly over the entire plate surface and start filtering immediately with less pressure and obtain maximum consistant clarity right from the start up to the end of the cycle.

★ A filter cake on a horizontal plate will not crack, slip or fall off even with varying pressure or a complete shut-down of the filter. No pre-coat renewal is ever required after an interruption in operation.

★ When it is necessary to clean the filter, the Sparkler filter tank can be emptied in a matter of minutes with a minimum of loss of valuable plating solution.

★ Any grade of filter paper from fine to coarse can be used in a Sparkler filter. This makes it ideal for carbon treatment of solutions. Carbon mixed with water in a stand-by tank is circulated through a clean set of filter paper on the plates until a carbon cake is formed. The solution requiring carbon treatment is then circulated through the carbon beds without contaminating the plating tank or a shutdown of plating operations.

★ At the end of the cycle with a Sparkler filter you can blow-down with air and produce a relatively dry cake that can be disposed of in a trash can rather than washing it down the drain with attendant sewer clogging problems.

★ You will find your Sparkler plating filter positive and dependable from a standpoint of uniform high quality filtering and economical in labor and material.

SPARKLER

Sparkler representatives in all principal cities are ready to give you personal service on your filtering problems, and show how you can make a material saving in operating cost.

MANUFACTURING COMPANY
Mundelein, Illinois

Sparkler International Ltd.
Prinsengracht 876, Amsterdam, Holland

Sparkler Western Hemisphere Corp.
Mundelein, Ill. U.S.A.

Personals

of Canada, a post he held until 1937, when he moved to Los Angeles as production manager of Pacific Chemical Company, later becoming vice-president and general manager. When Pacific Chemical was acquired by Wyandotte Chemicals Corporation in 1950, Pariseau joined Wyandotte as Los Angeles general sales manager.

William A. Nairne, G. Stuart Krentel and A. H. Nicholson, as a result of the purchase by Hanson-Van Winkle-Munning Co. of the plating division of the A. J. Lynch Co., Los Angeles, now have joined H-VW-M. All three have had extensive experience in the plating and polishing fields.

Nairne **Krentel**

Nicholson

William Nairne was with Lynch for 6 years. A graduate of the University of Arizona and a member of the AES, he will continue to cover the Los Angeles territory.

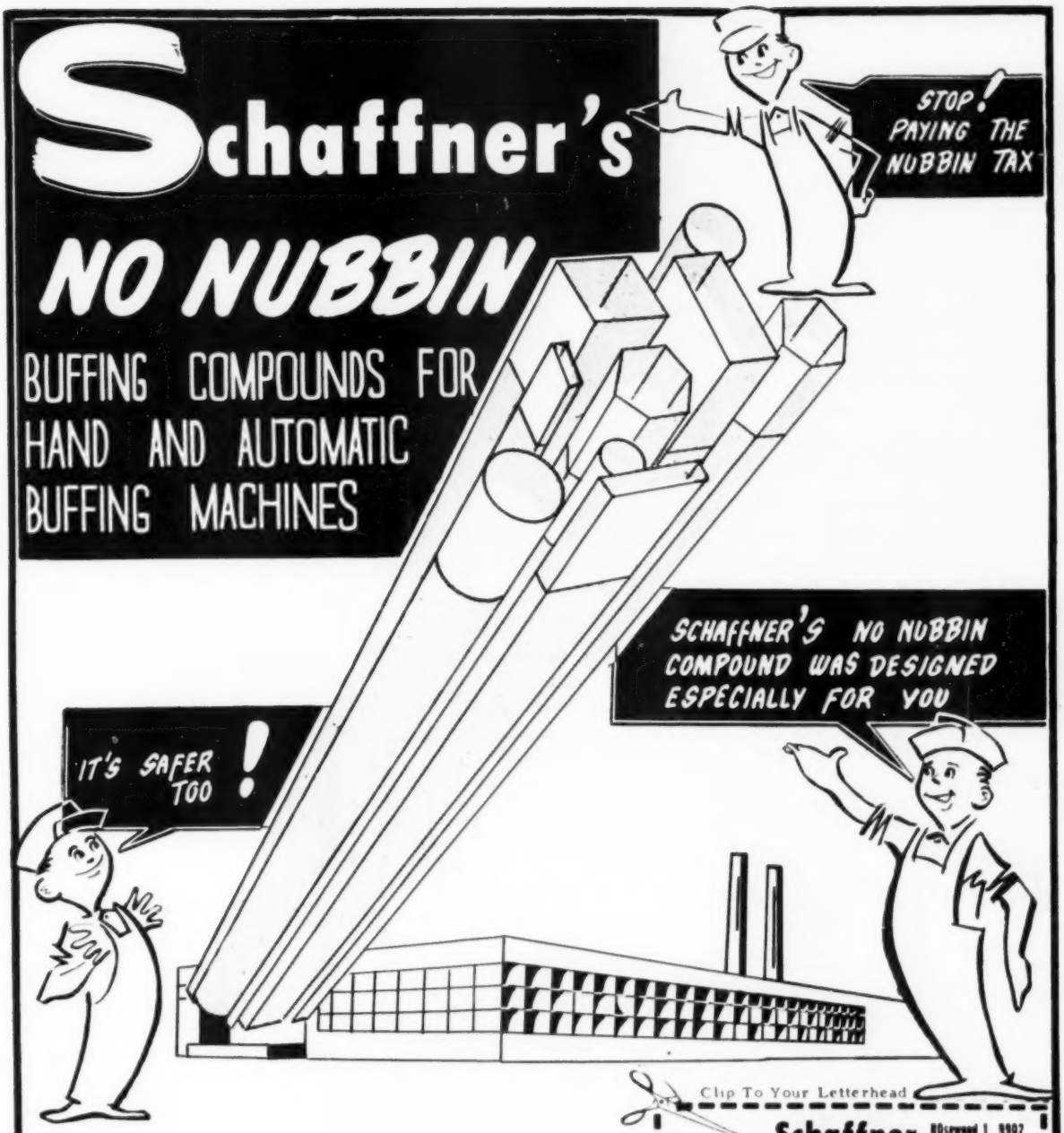
G. Stuart Krentel, recently elected president of Los Angeles branch, AES, has been connected with the electroplating business since receiving his M.S. from Michigan State College in 1933. He will continue to cover Los Angeles with Nairne.

Krentel's background includes research and development work at Chrysler Engineering Corp. and Rufert Chemical Division of Seymour Mfg. Co.; production and control work with Bay Mfg. Division of Electric Auto-Lite Corp. and Spence Electro Plating Co. of Los Angeles; and sales and service work with MacDermid, Inc.

A. H. Nicholson, who will continue to serve the San Francisco area, has been

Schaffner's NO NUBBIN

BUFFING COMPOUNDS FOR HAND AND AUTOMATIC BUFFING MACHINES



At last something has been done to eliminate what has been a major headache to the buffing and polishing industry for years! Schaffner's brand new NO NUBBIN Stick Compounds can be used on your present equipment with absolute safety to both men and machinery. No more flying nubbins! You'll never regret the day you tried Schaffner Quality Compounds Write today for free samples and prices.

Schaffner Mfg. Co., Inc.

Emsworth, Pittsburgh 2, Pa.

Clip To Your Letterhead

Schaffner manufacturing company, inc.
SCHAFFNER CENTER, EMSWORTH, PITTSBURGH 2, PA.

Quick! Send me information and samples on the following:

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COMPANY _____

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STORTSWELDING
means longer life
for all your special
metal processing
equipment

YOU HAVE complete freedom of design—and choice of materials. Plan and engineer your equipment for efficient and economical production. Storts will fabricate it to perform smoothly—and to last—to save maintenance and replacement costs.

42 STONE STREET — STORTS WELDING COMPANY INCORPORATED — MERIDEN, CONN.

Manufacturers of Welded Fabrications to Specification

FOR FURTHER INFORMATION, USE READER SERVICE CARD; INDICATE A 621.

PUMPS
HOSE FITTINGS
LINED TANKS
STAINLESS STEEL TANKS
FILTER PRESSES
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Here is YOUR PRIME SOURCE!
Join the long and ever growing list of satisfied customers who have purchased filtering and liquid handling materials and equipment from FILPACO for over 20 years.
Carbon Filters
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2439 S. MICHIGAN AVENUE CHICAGO 16, ILL. U.S.A.

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Personals

associated with the metal finishing industry for the past 8 years. A graduate of Wooster College, Wooster, Ohio, he worked as a plating chemist for Daystrom Corp., Olean, N. Y., for 3 years. He later supervised metal finishing operations at Daystrom's west coast plant in Fullerton, Calif. Nicholson, a member of the AES, also was associated formerly with Sundmark Supply Co.

Retaining supervision of west coast operations is **Harold R. Smallman,** assistant vice-president of H-VW-M. Under the new arrangement, H-VW-M will retain its principal western distributors. They include: Carl F. Miller Co., Seattle and Spokane; Zehrung Chemical Co., Portland; Southwestern Platers' Supply Co., Dallas; Brance-Krachy Co., Houston; E. R. Frost Co., Minneapolis and G. S. Robbins Co., St. Louis.

Richard N. Pynchon was appointed recently to the position of advertising and sales promotion manager by the Cowles

Pynchon

Chemical Co., Cleveland, Ohio. Pynchon replaces **Elmer A. Lord,** who will remain with Cowles as a sales representative in the heavy chemical department.

A native of Cleveland, Pynchon attended Ohio University and Western Reserve University. Before joining Cowles, he served in the Furnace Sales Division of the Perfection Stove Co. of Cleveland.

Harry W. Buchanan, Jr., has been named to the post of sales manager, chemical division by Metal and Thermit Corp., New York.

Buchanan, a graduate of Rensselaer Polytechnic Institute in chemical engineering, came to Metal and Thermit in 1947. In 1948 he joined the company's chemical sales division of which he became assistant sales manager in 1950.

At the same time the appointment of **Frank J. O'Brien, Jr.,** as general sales manager was announced. O'Brien, formerly manager of the Heekin Can Company plant at Springdale, Ark., came to Metal & Thermit in 1951 as manager of its scrap division, and has been a vice-president since 1952.

John B. Tinnon, formerly vice-presi-

avoid stream pollution due to chromium waste...

...with W&T Sulphur Dioxide Reduction Equipment

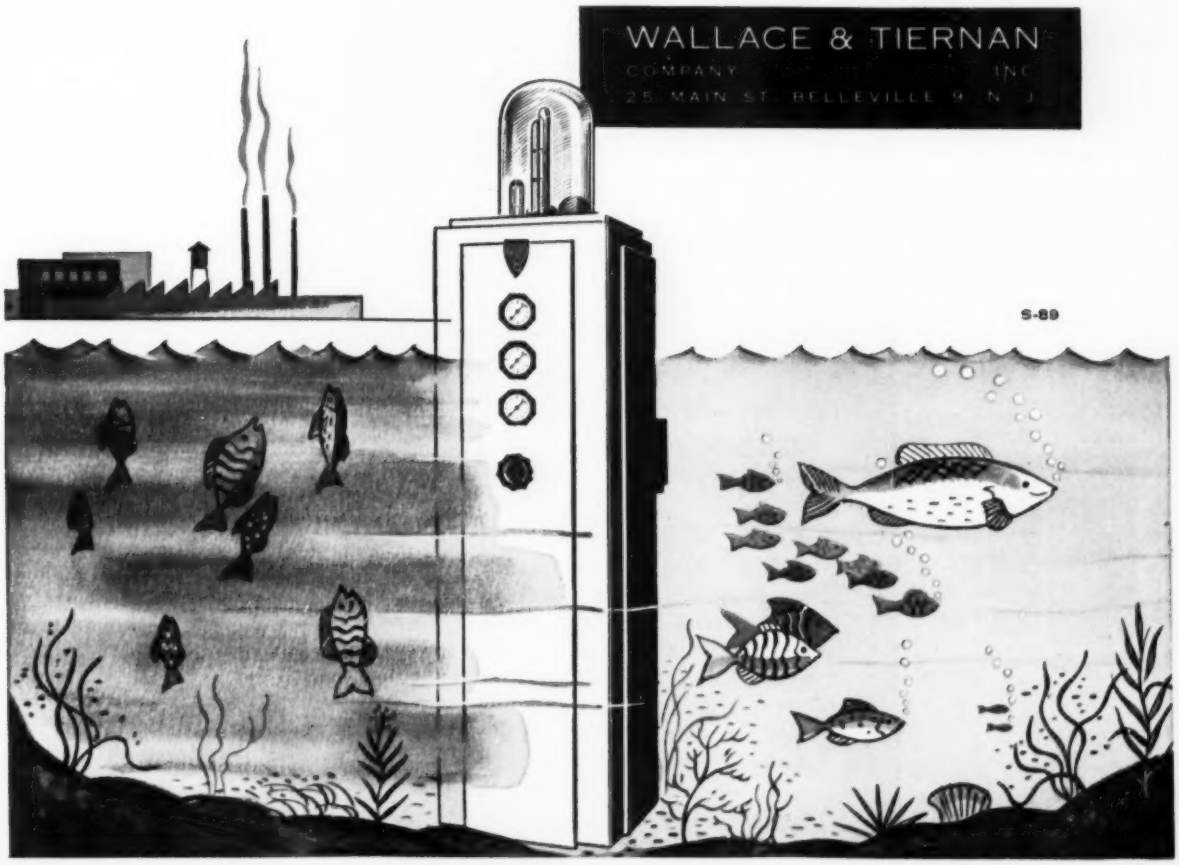
With the proper treatment equipment, toxic hexavalent chromium can be reduced by sulphur dioxide to the trivalent form and then completely precipitated by alkali for standard removal to a disposal area — such as a lagoon. After this treatment the waste water can be drawn off and safely disposed of in the usual manner. This treatment is in full compliance with most local and state pollution abatement laws.

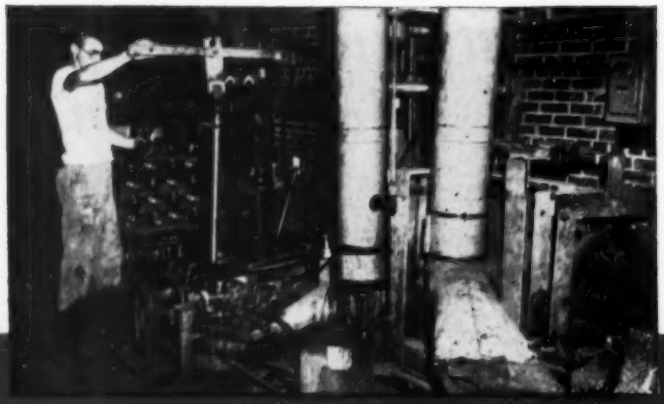
Wallace & Tiernan offers the heat treating and metal finishing industries several types of Sulphur Dioxide Feeders with optional controls for manual, semi-automatic or fully automatic operation. These feeders are adaptable to either the "batch" or "flow-thru" methods of treatment in both large and small plants.

Similar equipment is also available for the destruction of cyanide waste by alkaline chlorination.

W&T offers PROVEN EQUIPMENT — hundreds of similar units are serving industry today, EXPERIENCE — over forty years of building chemical feeding equipment, and SERVICE — field representatives are located in principal cities throughout the country.

Write today for additional information on W&T Sulphur Dioxide Feeders and Alkaline Chlorination Equipment, at no obligation to you, of course.





20-year old Chandeysson Motor Generator in service at Miller Electroplating, Inc., Evansville, Indiana

Chandeysson

CUTS POWER

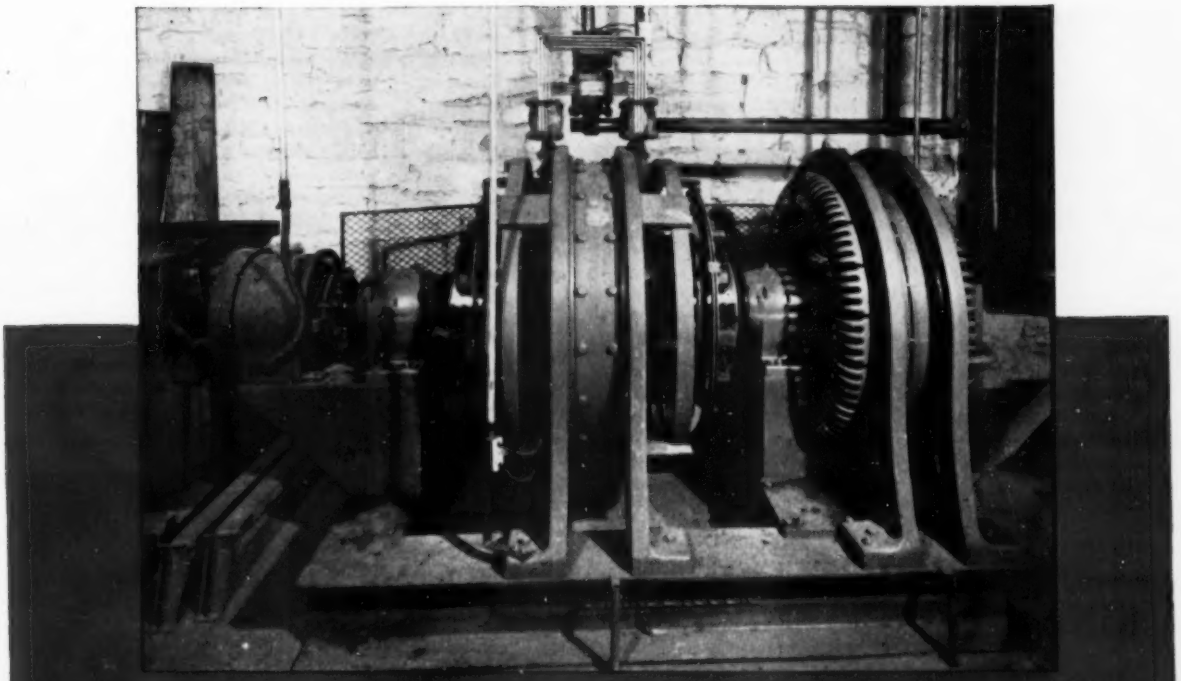
Convert with Chandeysson and Save 4 ways

1. Use less power
2. Get more out of the power you pay for
3. Be sure of power when you need it most
4. Enjoy lifetime power dividends

Bulletin D-102 contains complete data on specific and overall savings possible with every Chandeysson installation. If you are interested in power savings and power dependability, it will pay you to read this bulletin. Your copy sent promptly, and without obligation.

GOLDEN 1904 Chandeysson 1954 JUBILEE

FOR FURTHER INFORMATION, USE READER SERVICE CARD: INDICATE A 624.



CONVERSION COSTS

agrees Miller Electroplating, Inc. of Evansville, Ind.

16 hours a day for 20 years carrying overloads of 20% to 25% with the only maintenance in all that time being new brushes . . . that's the Chandeysson record at the Miller Electroplating, Inc. It's not an unusual record—there are Chandeysson units still being used after 48 years of economical service!

Read Mr. Miller's actual letter—

"... We have three of your machines in operation in our plant. The last two being purchased after using the first one for over 20 years.

"Our first machine has been in use on the average of 16 hours a day. A great deal of this time, carrying an overload of from 20 to 25% of its rated capacity. During this time the only maintenance expense has been new brushes. It might be of interest for you to know that the commutator has not even been repaired during this time.

"We are indeed thoroughly sold on Chandeysson Plating Generators.

Very truly yours,
MILLER ELECTROPLATING, INC.

Paul E. Miller, Pres.

Any way you say it, or figure it, such performance is proof once again that "Chandeysson cuts power conversion costs." You can expect similar performance from a Chandeysson installation in your plant. Write or mail coupon for full information.

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St. Louis 16, Missouri

CHANDEYSSON ELECTRIC COMPANY
4078 Bingham Avenue
St. Louis 16, Missouri

Please send me a copy of Bulletin D-102.

Name.....

Company.....

Address.....

City..... Zone..... State.....

Personals

dent and general sales manager, continues as chief executive sales officer of the company with extended activities including general administration and planning and programming for company expansion.

Walter F. Hess was added to the staff of Universal Midwest, Inc., of Chicago, agents for the Pennsylvania Salt Mfg. Co.

A mechanical engineer, Hess will handle sales of Pennsalt's line of chemical resistant cements, chemical resistant interliners, and chemical resistant coatings. With headquarters in Detroit, his territory will cover eastern Michigan, western Ohio and Kentucky. Prior to coming with Universal Midwest, Hess was manager of die cast sales for C. M. Hall Lamp Co., in Detroit.

O. A. Stocker, well known in the electroplating field for over 25 years, has joined the sales department of the electroplating division of United Chromium, Incorporated.

Stocker

Stocker, who is a 1925 graduate of the University of Michigan with a B.S. degree in chemical engineering, started his career in electroplating as a research chemist for the old Dodge Bros. Corp. in 1926. From 1928 through 1936, he worked for Bohn Aluminum and Brass Corp., first as a plating research chemist, later as assistant chief metallurgist. He joined the Seymour Mfg. Co. in 1937 where he helped develop a bright nickel plating process and was copatentee on several inventions relating to bright nickel plating. While with that company he was promoted to technical director of the bright nickel division. In 1949, he became general manager of the Rufert Chemical Co., a manufacturer of nickel catalyst.

J. L. Martin has been appointed vice-president in charge of sales by the S. A. Day Manufacturing Co., Inc., Buffalo, N. Y.

Martin

Martin, a native of Buffalo, is a chemical graduate of Canisius College after which he served three years as a commissioned officer in the Navy. He was formerly with Behr-Manning Corporation for eight years as a field engineer in the western New York area.

Glenn H. Friedt, Jr., has been promoted to vice-president and assistant general manager of United Platers, Inc., it was announced recently.

Formerly assistant to the president, Friedt, at 29, becomes one of the youngest industrial executives in the Detroit area.

A native of Detroit, he is a graduate of of the University of Michigan and a member of the Michigan State Bar.

He is president of the Plating Institute of Michigan, regional chairman of the National Association of Metal Finishers, and a member of the board of managers for the Detroit Branch of the AES.

Frederick H. Thompson has been appointed manager, Central Division, Metal Finishing Products by Divine Brothers Company, Utica, N. Y. He will be located in Ohio and will operate in the midwest.

Thompson has been associated with Divine Brothers Company since 1927. For the past 10 years he has operated the Yerges Manufacturing Company, Fremont, Ohio, a subsidiary of Divine Brothers Company.

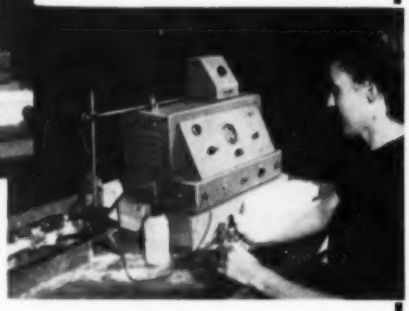
Charles Lamb, Jr., was appointed Treasurer and General Manager of the Yerges Manufacturing Company.

Lamb has been associated with Divine

KING-SEELEY CORPORATION, ANN ARBOR, MICHIGAN

solves thickness testing problem
WITH
KOCOUR ELECTRONIC THICKNESS TESTER

BELOW: To conform to specifications, operator can check work quickly, as it progresses. This is a regular production control operation at King-Seeley Corp.



ABOVE: King-Seeley Corp., manufacturer of automotive gauges, governors, interval timers and electrical appliances, conveniently located the Electronic Thickness Tester in production department

About 2 years ago the King-Seeley Corp. purchased the Kocour Electronic Thickness Tester . . . evaluated the instrument and have been using it since with confidence and satisfaction. Mr. C. F. Waite of that company wrote a paper, "Thickness of Electrodeposited Coatings by the Anodic Solution Method" concerning their problems and how they were solved.

King-Seeley Corp. is one of the many companies which are now saving hours of control and production time with the Electronic Thickness Tester. In addition, more efficient operation and higher standards of quality can be maintained confidently.

Why not investigate the possibilities today. See how the Kocour Electronic Thickness Tester can solve your problems.

Write for literature and get your copy of "Thickness of Electrodeposited Coatings by the Anodic Solution Method."

KOCOUR CO.
4801 S. St. Louis Ave.
Chicago 32, Illinois

Always specify KOCOUR TEST SETS from your supplier!

Don't let acids take the shirt off your back!

Constant replacement of chemically damaged clothing is a thing of the past

An independent laboratory agitated these two shirts in a 60% solution of sulphuric acid for two minutes. Both shirts, after immersion, were allowed to dry before rinsing and neutralizing the acid. (Details on request.)

The COTTON shirt was . . . "completely tendered . . . retains none of original tensile strength."

The CHEM-WEAVE shirt was . . . ". . . unaffected. . . . No change in appearance. No loss in strength."

ALSO A THING OF THE PAST is the frequent replacement of work clothing that has just plain worn out. Chem-Wear garments outlast cotton and wool by up to 25 times.

YES! That's right. Chem-Wear outlasts cotton and wool by up to 25 times. We can name cases where Chem-Wear garments originally bought in 1949 are today . . . **after five years** . . . still in service.

CHEM-WEAR offers you these MONEY-SAVING advantages

- **Acid and Caustic resistant.**
- **Service life measured in years . . . not months or weeks.**
- **Serviceable looking throughout service life.**
- **Lock-stitched . . . seams as strong as the fabric.**
- **Unharmed by repeated industrial laundering.**
- **P-O-R-O-U-S . . . it "breathes" . . . it's comfortable.**

Plus: A new protective feature . . . a new emulsion gives Chem-Wear garments a high surface tension that makes splashed chemicals puddle or roll off. This new protection can be reapplied simply and inexpensively in each laundering.

Our new catalog tells the complete story along with sizes, prices and descriptions of Chem-Wear shirts and trousers, coveralls, and 100% impervious work aprons. We'd like to send you a copy. Please write to:

CHEM-WEAR, Inc.

1-P BOSTON POST ROAD P.O. BOX 1044 DARIEN, CONN.

Personals

Brothers Company in Utica for the past nine years in various capacities, and was more recently sales manager of the Metal Finishing Products Department.

Before joining Divine Brothers Company, Lamb was associated with the Western Electric organization.

Phil H. Richey has been named to the position of assistant works manager by the Detrex Corporation of Detroit.

A. O. Thalacker, Detrex president, said that Richey will report directly to **R. A. Emmett, Jr.,** works manager of the company's equipment division in Detroit. Richey also will continue as assistant treasurer.

After graduating from the University of Michigan, Richey was associated with the Detroit Bank before joining Detrex in 1948. Advancing through various positions in the controller's office, he was appointed personnel director in 1950. Subsequently, he was assigned to special duties in the office of **E. W. Allison,** treasurer.

William O. Bosserman has been named managing engineer, Anodes Division of Sipi Metals Corporation.

Bosserman, for the past 25 years, has been associated with the nonferrous field. His experience embraces all phases of plating problems as related to anode use, particularly in the copper and zinc base fields.

Al G. Jason has been named district manager for Sipi Metals Corporation with offices at 3535 W. Verona Court, Milwaukee 15, Wis.

Jason, a native of Milwaukee, who has been active in the nonferrous metal field for the past 15 years, has been associated with Sipi Metals Corporation for the past 6 years and is well known throughout the Industry.

William T. Walling, electrochemist, Hanson-Van Winkle-Munning Co., has been assigned to the Chicago area by the company.

Walling

Walling will be associated with **E. C. Bosl** who presently is covering this territory and several midwestern states. Besides supplementing the work of Bosl, he will be available for service throughout the Midwest. Walling moves to Chicago from Matawan where he also has been doing field electrochemical service work.

In addition to his electrochemical background, Walling has worked as a plater, and has experience in buffing and polishing. Originally trained at the H-VW-M laboratory in Matawan, he was graduated from Seton Hall University with a degree in chemistry, and joined H-VW-M upon his graduation.

Clarence A. DeGroat has been appointed sales manager by the J. J. Siefen Co., Detroit, Mich. DeGroat has worked as salesman for the company for seven years in Michigan and Ohio.

The company also announced the appointment of **Cameron Elliott** in the northern Ohio territory. His address is 1241 Sunset Rd., Mayfield Heights, Ohio.

J. Harrahill has been appointed plant manager and **F. K. Richardi** has been named assistant plant manager of the Lancaster Division by the Permutit Co., New York, N. Y., whose newly completed 83,000 square feet factory on the outskirts of Lancaster, Pa., also was announced.

Harrahill, with Permutit since 1947, was assistant plant manager of their Brooklyn, N. Y., plant from January, 1947 to December, 1951 when he was moved to Philadelphia as plant manager of the Simplex Valve & Meter Co., a wholly owned subsidiary.

Richardi joined Permutit in January, 1952 as assistant plant manager to fill the position vacated by Harrahill. However, during the past two years, he has been acting plant manager of the Brooklyn Plant.

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SPECIFIED
EXCLUSIVELY
FOR
RACK PATCH

"I selected MUNRAY PC 7 to patch our racks because it really dries fast, does not contaminate our solutions, keeps contact points free of underplating, and is exceptionally compatible with other coatings." — Plant Manager, large chrome plating company located in Ohio.

Over 8 years experience has proven MUNRAY PC 7 to be the most outstanding protective coating available. Widely used for rack coating and patching, it is highly resistant to abrasion and is an unexcelled corrosion barrier for use on ducts, hoods and similar equipment.

MUNRAY PC 7 requires no primer, baking or special handling, dries tack-free in 20-30 minutes, is an absolute non-conductor, and will not peel because of alternate heating and cooling.

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JOE-D Specialists in SISAL BUFFS!
Holders of the original patent on Bias Sisal Buffs — U. S. Pat. No. 2443706
It took specialized "know-how" to conceive and create the first patented Bias Sisal Buff! And that same knowledge has been steadily enlarged and improved by the ablest, most experienced staff in the business—concentrating on this type of buff. Today, our modern, efficient plant proudly produces buffs that meet the most exacting requirements of the metal finishing industry. Always insist on original quality. Specify JOE-D—America's finest Bias Sisal Buffs.
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Personals

Russell J. O'Neil has been appointed a field engineer by the Norton Co. He will be assigned to the Detroit district office.

O'Neil

O'Neill, a native of Canada, has been with Norton since 1945. He was formerly a group leader at the Detroit office from 1947 to 1951 when he became a supervisor at the Cleveland office. Since August, 1953, he has been taking the sales training course.

Hugh T. Price, Jr., recently was made factory manager of Norton's grinding machine division, replacing **Iver G. Freeman** who became vice-president of Reed-Prentice Corp.

Roland T. Nelson replaces Price as production manager, while **Oscar A. Erickson** takes over Nelson's job as planning engineer.

E. William Eipper, formerly associated with the Oronite Chemical Division of Standard Oil Co. of Calif., has joined the market research and development department of Stauffer Chemical Co. and associated companies. He will make his headquarters in San Francisco.

Eipper started in the chemical industry in 1934 with the Calco Chemical Division of American Cyanamid Co. Later he became director of research and general laboratories of the U. S. Army Ordnance Department's Picatinny Arsenal, Dover, N. J.

Kenneth H. Allen has been appointed director of purchases. Allen joined Stauffer in 1944 and was purchasing agent for the company's western operation with offices in Los Angeles. His new headquarters will be in Stauffer's New York office.

Milton W. Melander has been appointed export sales division manager. Melander joined Stauffer in 1923, and was Pacific Coast Export Manager since 1942. His headquarters will be in Stauffer's New York office.

Dr. Alexander Blakely has been appointed vice-president in charge of manufacturing for the Metal Removal Co., Chicago. He will be in charge of the production of all abrasive grinding wheels and discs.

Obituary

It is with deep regret that we note the passing of John Acheson. John was the last surviving charter member of the Toronto Branch of the AES, and was the best known and most respected member. He passed away in his 79th year.

Acheson

John Acheson was one of the founders of the Toronto Branch which was formed in 1912, and was president of the branch on three separate occasions. He was active in the Society right up to his recent illness and was chosen as Branch Delegate to the 1954 New York Convention.

For over 62 years, John Acheson was directly connected with the plating industry. He started as a buffer and polisher, worked as a plating foreman in several shops in the Toronto area for a number of years, then joined Canadian Hanson & Van Winkle Company Ltd., as sales representative in 1919. He continued with that company until his recent retirement.

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Daniels presents the radically new 8H Plating Barrel with these innovations:

- New Cylinder Arm and Arm-lock
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- New rubber-covered Contact Frame
- Three Cylinders to choose from — Bakelite, Rubber or high-temperature Lucite

Designed to fill the demand for a small barrel for efficient plating of small lots of bulk parts, the 8H is ideally suited for precious metal plating, laboratory work and as a supplement to the production plating plant.

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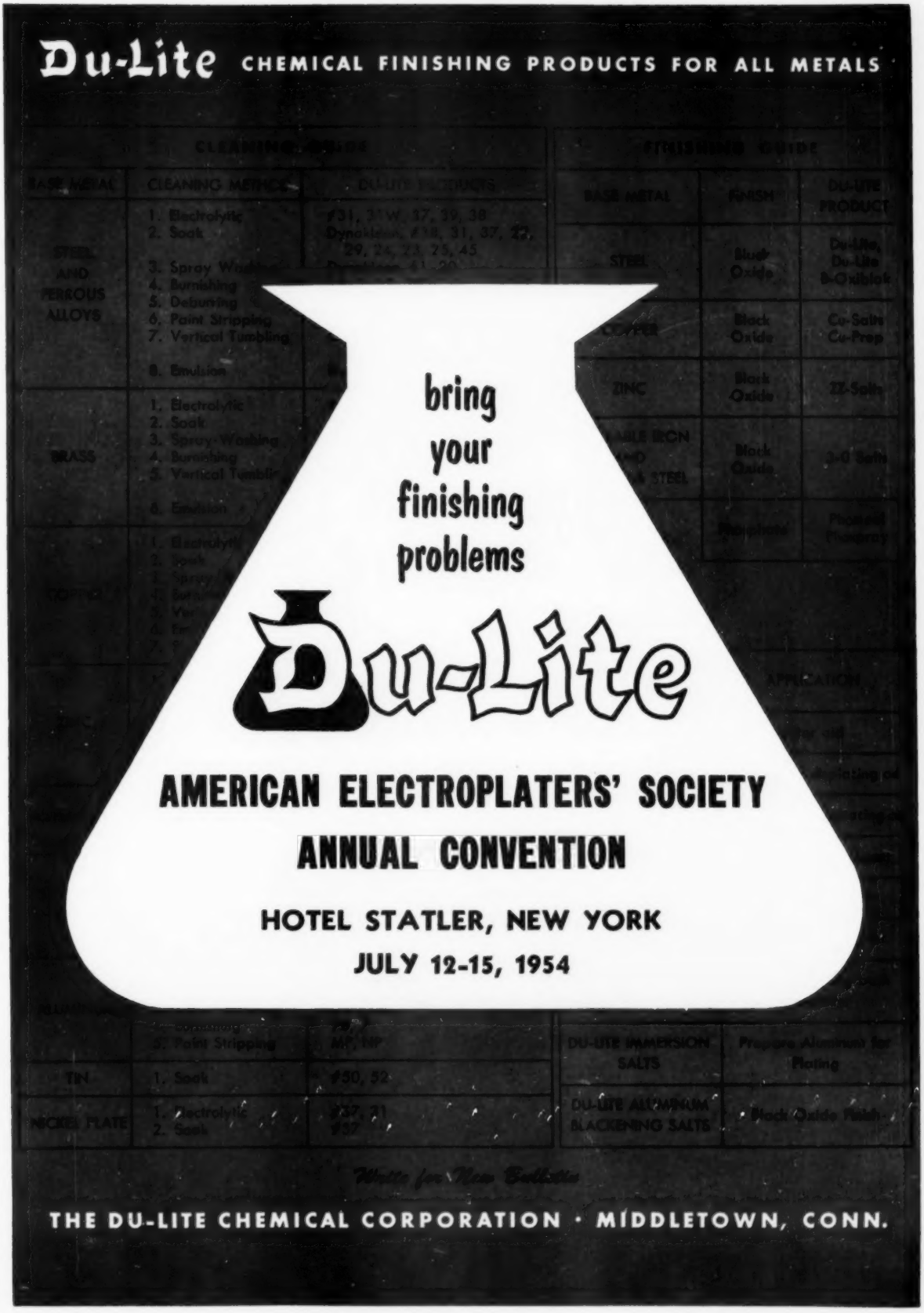
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ANNUAL CONVENTION
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JULY 12-15, 1954
Write for New Bulletin
THE DU-LITE CHEMICAL CORPORATION · MIDDLETOWN, CONN.

Trade Literature

L—600. Pressure Blasting Process—The Cro-Plate Co., Inc., 47 Windsor St., Hartford, Conn., announces the publication of a new fully illustrated 6-page booklet describing in detail their regular velocity and high-velocity pressure blasting process and its applications in the field of burring, cleaning, scale removal, etc. Also described is the full range of manual and automatic units. For your copy of this informative booklet, use Reader Service Card.

L—601. Unichrome Series 4000 and 5300 Plastisols—United Chromium, Inc., 100 E. 42nd St., New York 17, N. Y., has just released a 4-page bulletin describing the unique combination of physical and chemical properties offered by Unichrome plastisol compounds. Used for coating, casting, or molding, these versatile vinyl compounds open entirely new fields to the engineer, designer, product finisher, and architect. Unichrome series 4000 and 5300 plastisol compounds produce coatings or moldings combining the best features of chemically inert vinyl plastics and rubber. Copies of a descriptive bulletin may be obtained by using Reader Service Card.

L—602. Plating Equipment—A new 24-page general catalog which pictures and describes a complete line of platers' equipment has been released by the Udylite Corp., Detroit 11, Mich. Full automatic plating machines included in the publication are: return types, straight lines, rotarys and juniors. Barrel plating equipment and accessories are included as well as electrical equipment, filters, dryers and a listing of processes and supplies. For your copy, use Reader Service Card.

L—603. Recording Controllers—A new line of process instruments including potentiometric and a-c bridge recorders and recording controllers has been announced by the General Electric Company's Meter and Instruments Dept., Schenectady 5, N. Y.

The instruments, designed for continuous measurement and control uninterrupted by periodic standardization, incorporate new measurement circuitry and components, according to company engineers. Foremost among the new features are a magnetic standard in the potentiometric system and a bridge-balancing unit in the a-c bridge system.

Both models are available with either electric or pneumatic control, and are equipped with a unique centerless pointer that simplifies chart changing and leaves practically all of the chart exposed to view for easy reading. For your copy of fully descriptive literature on these units, use Reader Service Card.

L—604. Metal Finishing Literature—Three bulletins of interest to the metal finisher have been released by The Swift Industrial Chemical Co., Albany Turnpike, Route 44, Canton, Conn.

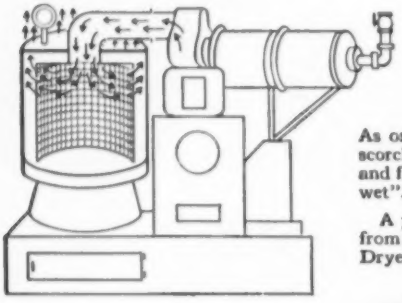
The bulletins cover: (1) Zinc brighteners. New zinc addition agents for both barrel and steel tank zinc plating are described; (2) Chromate finishes. New chromate finishes for zinc, cadmium, and aluminum are detailed; (3) Plating products. The folder describes Promat products for zinc, cadmium and copper plating; white brass plating; metal pickling and cleaning and chromate finishes. For your copy of these folders, use Reader Service Card.

L—605. Surface Resistance Analyzer—A newly developed, portable surface resistance analyzer for accurate measuring of aluminum interfacial sheet to sheet resistance in connection with resistance welding is described in a data sheet issued by Chemical Research Associates, 333 N. Michigan Ave., Dept. 64, Chicago 1, Ill.

Outstanding features are: Completely portable, single instrument, no manual pumping required for press power source, simple operation, rugged, wide measurement scale. For your copy, use Reader Service Card.

L—606. Self-Operated Flow Regulator Catalog—A new self-contained flow regulating device for clean gas-free liquids is described and illustrated in catalog No.

EVER BLOW INTO AN ASH TRAY?

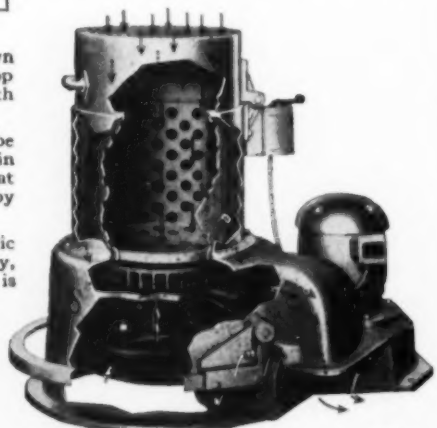


If you did, you saw a practical demonstration of the principle of air deflection. In old type dryers, air *blown* in from the top is deflected by the top layer of parts. As one user put it, "the top layer gets scorched, the next layer is nice and dry, and from there on down the parts are still wet".

A powerful suction fan *draws* the air from the bottom of the modern Nobles Dryer. Fresh air rushes in from the top to fill the vacuum and is drawn through the entire contents from top to bottom where it is expelled with the water.

Steam or electric heaters may be mounted compactly in the cover in contrast with space consuming, heat wasting, separate units connected by pipe.

An internal expanding, hydraulic brake stops the machine smoothly, and quickly. The "brake pedal" is a ring extending around the entire working area so that the machine can be stopped instantly from any working position. In the interest of faster drying and lower costs write today!



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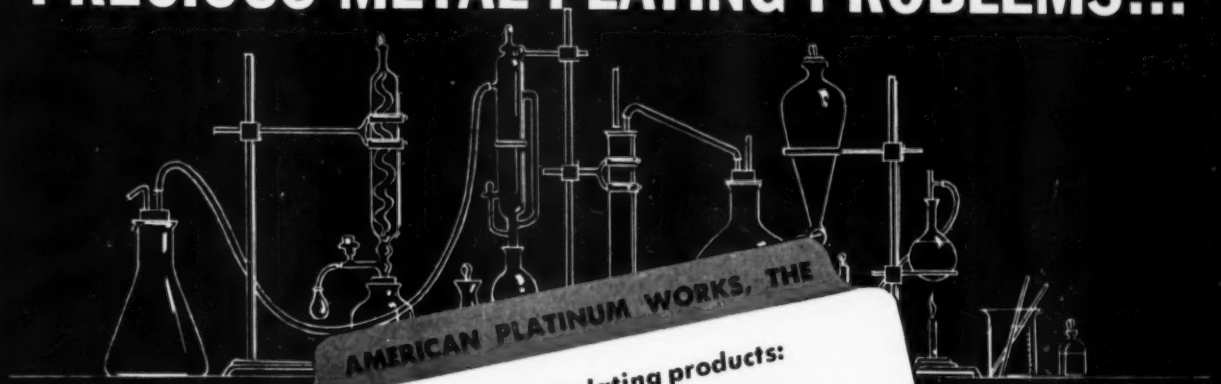

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Our Research Staff develop the anodes and the precious metal salts plating materials you need for best results. The valuable experience and facilities of our Electro-chemical Research Division are at your service, to help minimize your costs or improve efficiency in your plating procedures.

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Trade Literature

10-F-70 issued by Fischer & Porter Co., 49 Jacksonville Rd., Hatboro, Pa. A constant flow rate is maintained by means of energy derived from the flow stream itself, without external power supply. The regulator is unaffected by position and may be equipped with a diaphragm motor valve for remote setting of control point. For your copy of the catalog, use Reader Service Card.

L—607. Blast Cleaning Accessories—Pangborn Corp., Hagerstown, Md., has published a 28-page booklet that describes the accessories and supplies which are intended for use with blast cleaning equipment.

In order to be helpful to customers, the book includes engineering selection data as well as specifications. Accessories include: helmets, gloves, hoses, nozzles, aprons, blast room accessories and repair parts. Several pages are devoted to correct selection of abrasives according to cleaning requirements. For your copy of the bulletin, use Reader Service Card.

L—608. Building Maintenance Folder—This new folder tells how to solve dangerous and unsightly floor conditions; how to patch or overlay concrete areas that have been ruined by acid, grease, oil or excessive wear; how to harden concrete surfaces and eliminate "concrete dusting"; how to prevent water-seepage and active water leaks in basements, underground foundations, elevator pits, tunnels, dams and reservoirs; how to seal roof leaks and rejuvenate dried-out roof areas. For a copy of this latest maintenance folder, write Stonhard Co., 500 Stonhard Bldg., 1306 Spring Garden St., Philadelphia 23, Pa., or use Reader Service Card.

L—609. Bulletin On Cold-Aluminizing—A new bulletin offered by Emjay Maintenance Engineers, Rutherford, N. J., includes a reprinted case history of a 3-year service application test to which Kolmetal® coatings were subjected. This new product, consisting of pulverized aluminum in a plastic base, is applied without heat to equipment and storage tanks used by the chemical industries. The bulletin covers characteristics and applications, and also includes a table of recommended uses and application instructions. For your copy, use Reader Service Card.

L—610. Industrial Fan Bulletin—Propellair Division of Robbins & Myers, Inc., has published a new bulletin covering their line of industrial fans. This new 12-page bulletin contains dimensions, applications, and performance data. It offers helpful information concerning cooling and drying problems, system ventilation, and open surface tank ventilation. For your copy, use Reader Service Card.

L—611. Diatomite Filters for Industry—How filtration of water, or other liquids for industrial use can be obtained simply, economically, and efficiently by means of Graver diatomite filters is described in Bulletin WC-115, just published by Graver Water Conditioning Co., a division of Graver Tank & Mfg. Co., Inc., 216 W. 14th St., New York 11, N. Y.

Text, photographs, and schematic diagrams show typical arrangements of Graver diatomite filters and explain how the liquid to be treated is passed through a filtering medium consisting of a form of silica known as diatomaceous earth. The result is a very high degree of clarification.

The bulletin notes the 50 per cent to 70 per cent space savings virtue of the diatomite filter over sand or anthrafilt filters of the same capacity, leading to lower building and installation costs. Besides yielding water free of all turbidity and all known microorganisms, the Graver diatomite filters save up to 50 per cent in wash water over sand or anthrafilt filters, according to the bulletin. Copies of the new bulletin may be obtained by using Reader Service Card.

L—612. Laboratory Equipment Booklet—A revised edition of "Better Laboratory Planning," based upon many helpful comments from users of the original publication, carries a more comprehensive approach to the better planning of laboratories.

It includes many new and attractive pictures of laboratories ranging from in-

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ZIPPO CLOTH BUFFS
These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.
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You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.
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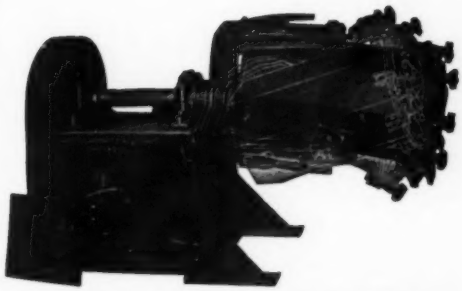
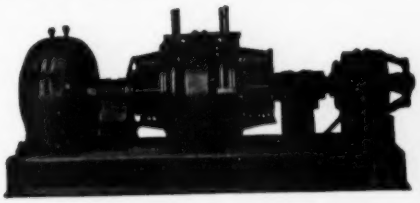


TYPE "L" SIZE 2 BURNISHING BARREL



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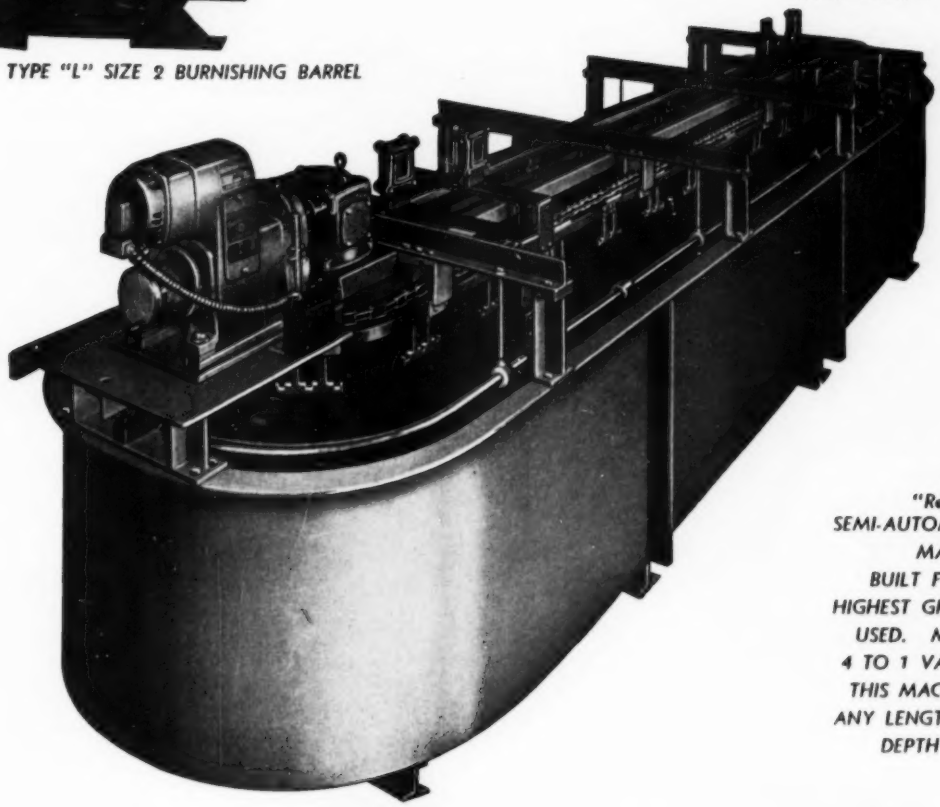

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That's where the Promat program of *continuing* research comes in . . . the kind of research that wears overalls and rolled sleeves under the white coat . . . the kind of research that tinkers around your plating bath and conveying equipment long after you are satisfied of improvement.

Dedicated to creating better means to *prepare* for plating, *plate,* and offer *protection* for better metal finishes, Promat research is backed by untiring, on-the-spot SERVICE — your assurance that Promat products *do* a better job . . . and do it in a way that costs you less and benefits your customers most:

PROMAT C-42 ZINC ADDITION AGENT

For still, semi or full automatic alkaline zinc plating. Produces semi-bright, "burn free," deposit at current densities up to 200 *amps. per square foot.* Readily accepts secondary treatments.

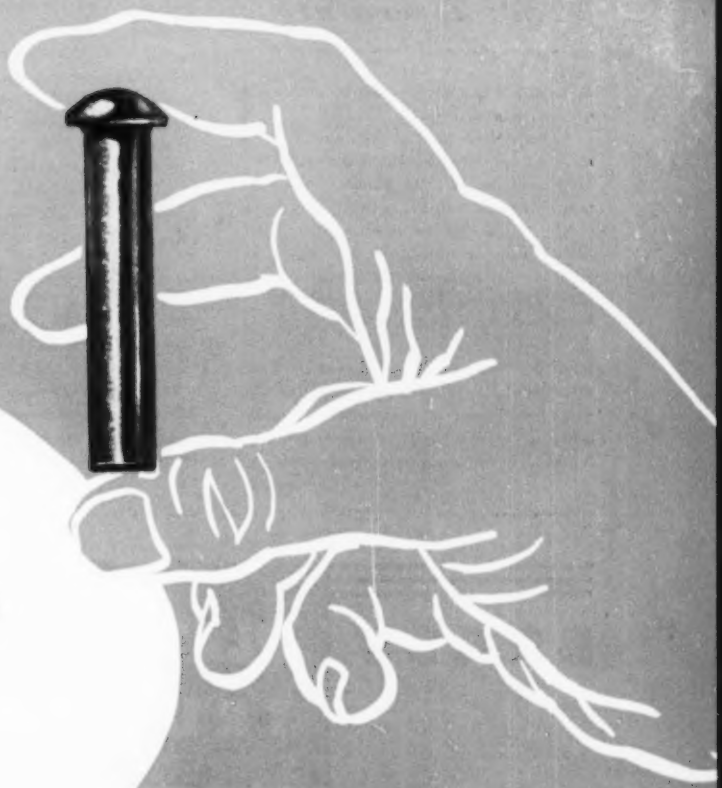
PROSEAL #9

No need to pay storage and freight on water with this versatile *dry* chromate powder. Proseal #9 is simple, economical to use on zinc, cadmium or brass. In bright, bronze, OD or Gold. Ounces of acid and chromate powder make *gallons* of protective solution.

PROMAT B4 . . . B4M and B8

A simple, fast, economical brightener for high brilliance, excellent throwing power and deep color zinc deposits on barrel and still tank work. Average cyanide solutions can be easily and inexpensively converted.

. . . THE MEANS FOR BETTER, FASTER AND LOWER COST METAL FINISHING.



FOR PROTECTION. Chromate films for zinc, aluminum and cadmium in bright, yellow and OD . . . a chromate designed for your specific use, *real* protection from corrosion . . . an excellent base for paint.

FOR PLATING. Processes for zinc and cadmium. Complete cyanide copper plating process. Probrite White Alloy (see below) and a unique kicker unit to increase throwing power and improve crystal structure in cadmium and copper.

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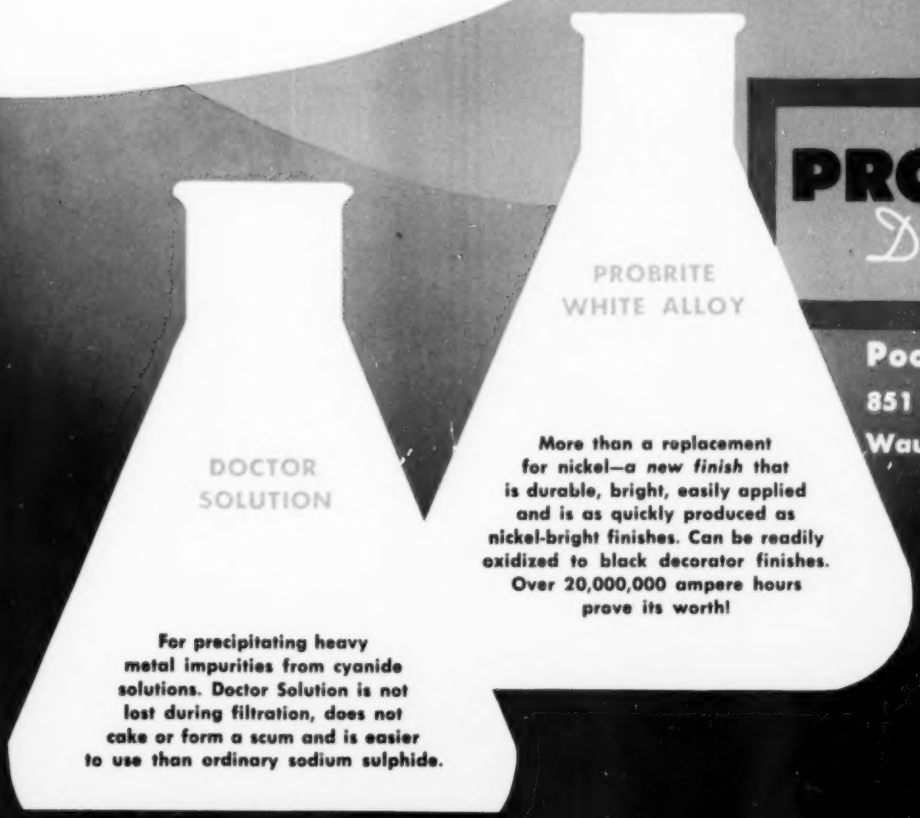

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More than a replacement for nickel—a *new finish* that is durable, bright, easily applied and is as quickly produced as nickel-bright finishes. Can be readily oxidized to black decorator finishes. Over 20,000,000 ampere hours prove its worth!

For precipitating heavy metal impurities from cyanide solutions. Doctor Solution is not lost during filtration, does not cake or form a scum and is easier to use than ordinary sodium sulphide.

Trade Literature

dustrial lab layouts to research and development laboratories.

A helpful section of the new book is devoted to "Recommended Bidding Practices"—of service to planners—answers many questions on the subject of bidding.

Copies of "Better Laboratory Planning" may be obtained free from the Laboratory Equipment Section, Scientific Apparatus Makers Assoc., 20 N. Wacker Drive, Chicago 6, Ill.

L—613. Atmosphere Control in Metallurgical Applications—The tremendous importance of providing inert, oxygen-free gases to such processes as heat-treating, welding, sintering and coating of metals is brought out in a new bulletin entitled "Atmosphere Furnaces." It shows how, through accurate instrumentation and process regulation, the inertness of gas streams can be assured. The equipment required for continuous gas stream analysis is listed and described. For free copies of this helpful data write to A. O. Beckman Inc., 1020 Mission St., S., Pasadena, Calif., or use Reader Service Card.

L—614. Nickeloid Booklet—Fabrication techniques, uses and properties of its prefinished metals are described and illustrated in a new 24-page booklet available from American Nickeloid Co., Peru, Ill.

High lighting the new beauty and production economies gained by using Nickeloid metals, the booklet goes on to illustrate scores of successful applications in the electrical appliance, stove and heater, lighting, housewares and display industries. The scope of the uses runs the gamut from stove pipes to rotisseries. Preplated finishes of Nickeloid metals include chromium, nickel, brass and copper on the following base metals: steel, zinc, brass, copper, aluminum.

For those who fear that the severity of their manufacturing operations denies them the economy and appearance advantages of using Nickeloid prefinished Metals, there is an enlightening section on Mar-Not, the protective covering that preserves the lustrous finish of Nickeloid metals during drawing and forming operations, then "peels off like a banana skin." For your copy of this booklet, use Reader Service Card.

L—615. Line-Operated pH Meter—A new 4-page brochure has been issued by the Photovolt Corp., 95 Madison Ave., New York 16, N. Y. The booklet emphasizes the simplicity and low price of the unit which have been achieved by taking advantage of the most recent advances in electronic tubes and circuits, without sacrificing either accuracy or stability. For your copy, use Reader Service Card.

L—616. Paper on Cu-Mn-Sn Alloys—"The Structure and Mechanical Properties of Copper-Manganese-Tin Alloys" has recently been issued by the Tin Research Institute. It describes a range of new alloys which may be useful in the fields hitherto served by nickel silver. The alloys meet the demand for a white metal with good mechanical properties at a competitive cost. It readily can be cast, forged, rolled, stamped, and has an adequate resistance to corrosion. It is satisfactory as a basis metal for the usual plating finishes used in industry.

Of special interest is the fact that the new copper-manganese-tin alloys may effect a useful economy in nickel during the present scarcity, but field trials suggest that they may make a permanent addition to the copper-base alloys used in industry.

Copies of this paper, originally published in the Journal of the Institute of Metals, may be obtained gratis from the Tin Research Institute, Inc., 492 W. Sixth Ave., Columbus 1, Ohio.

L—617. Protective Coatings—The Atlas Mineral Products Co., Mertztown, Pa., announces the availability of a booklet containing 50 pages of information on protective coatings described on a generic basis. For a copy of the booklet, use Reader Service Card.

L—618. Electrochemical Reductions and Oxidations Control Apparatus—A new apparatus known as the Redox-O-Trol provides precise, automatic control of electrochemical reactions by controlling electrode potentials and has sufficient

BRASS PLATING WITH TRUE BRITE

❶ improve color

❷ save labor

❸ eliminate supervision

❶ *color stays constant . . . no rejects*

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❸ *trouble free . . . only one addition instead of three*

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Available in regular 3 to 1 ratio for yellow Brass Plating.

Special ratio materials for plating richlow brass or any other desired alloy of copper and zinc.

Suitable for both still tanks and barrels.

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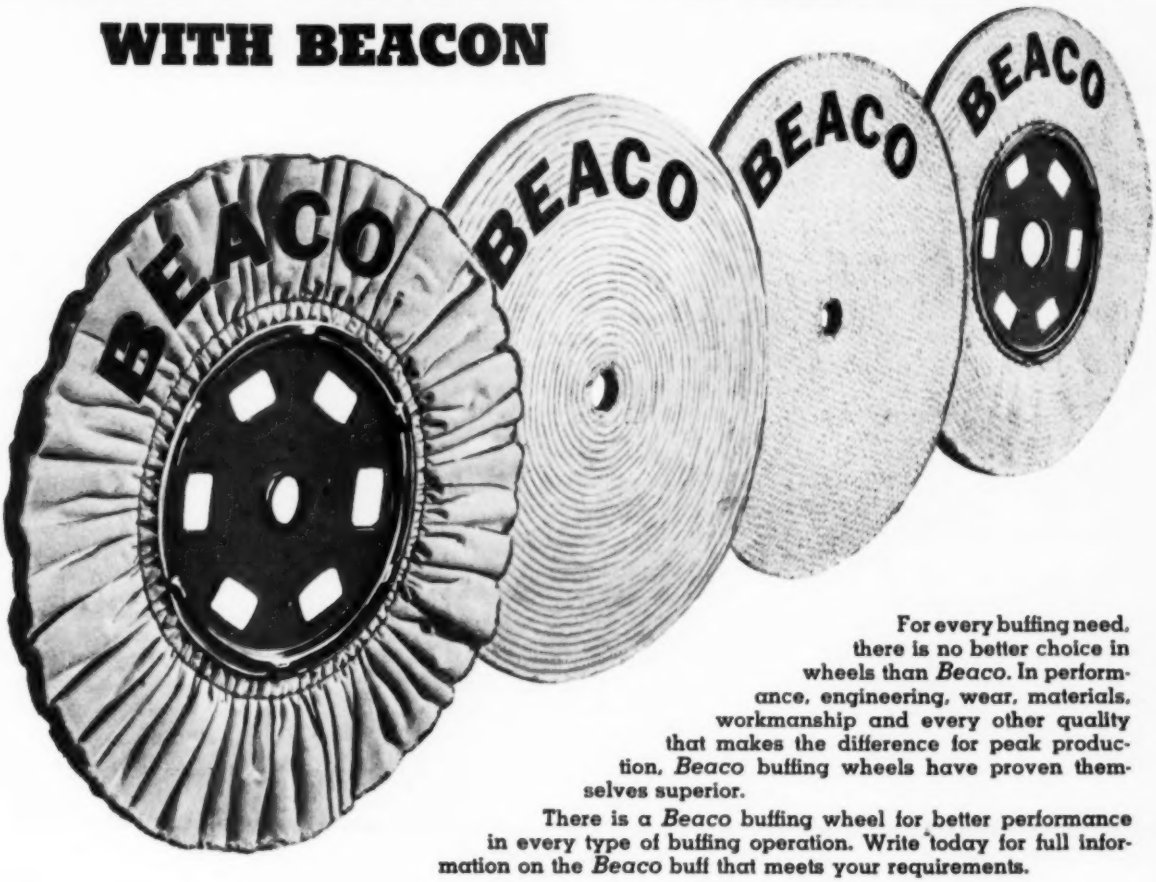

For every buffing need, there is no better choice in wheels than *Beaco*. In performance, engineering, wear, materials, workmanship and every other quality that makes the difference for peak production, *Beaco* buffing wheels have proven themselves superior.

There is a *Beaco* buffing wheel for better performance in every type of buffing operation. Write today for full information on the *Beaco* buff that meets your requirements.

...and the right compound to do the job right

Improved and quicker cutting and coloring that mean substantially greater production at less cost offer the perfect complement to *Beaco* buffing wheels in the new line of Beacon compounds.

The *Vincite* iron-free, natural abrasive compounds for brass, copper, aluminum, die castings and plastics; the *Violet Ray* compounds, made without animal, fish or mineral greases; and the *Beacon* compounds manufactured with conventional greases in an excellent line of tripoli, stainless steel and lime finish — all offer a dependability and superiority for their specific purposes that are beyond any in the field.

A trial will convince you — write today.

Beacon plants in the East and Middle West

ESTABLISHED 1888

BEACON SUPPLY CO.

110 Marginal St., Chelsea 50, Mass.

Trade Literature

output for preparing selective reduction and oxidation within 100 mv (usually less than 50 mv).

By means of this apparatus, electrolytic reduction and oxidation in many cases result in higher yields and cleaner products with less time consumed in their preparation. The Redox-O-Trol affects preparation of selective reduction and oxidation products from organic compounds by fully automatic control of either anode or cathode potential, regardless of load resistance or concentration changes.

The Redox-O-Trol is useful also for the electrolytic separation and determination of metals, and for the precise control of numerous chemical reactions.

A descriptive bulletin may be secured by writing the manufacturer, American Instrument Co., Inc., Silver Spring, Md., or by using Reader Service Card.

L—619. Air Filter Booklet—"Moisture Control in Compressed Air" is the title of a new 4-page brochure, issued by the Van Products Co., 3736 W. 12th St., Erie, Pa. It discusses types and quantities of impurities in compressed air and methods for their removal.

Although the subject matter is complex, the information is set forth in a manner easy to read and understand. The Vi-Speed method, units, and dessicant are clearly described along with results that can be anticipated. For your copy, use Reader Service Card.

L—620. Specifications and Tests For Electrodeposited Metallic Coatings—This publication has been compiled to bring together in convenient form for the use of the industry, all of the ASTM Specifications and Methods of Test pertaining to electrodeposited metallic coatings on metals.

ASTM Committee B-8 on Electrodeposited Metallic Coatings and the American Electroplaters' Society prepared jointly the specifications and tests in this latest edition. The AES is officially represented on B-8. The book, in heavy paper cover, has 96 pages and sells for $1.85. It contains Specifications For Electrodeposited Coatings: Zinc on Steel; Cadmium on Steel; Nickel and Chromium on Steel; Nickel and Chromium on Copper and Copper-Base Alloys; Nickel and Chromium on Zinc and Zinc-Base Alloys; Lead on Steel; Chromate Finishes on Electrodeposited Zinc, Hot-Dipped Galvanized, and Zinc Die-Cast Surfaces.

Also covered are: Methods of Testing Local Thickness of Electrodeposited Coatings; Salt Spray (Fog) Testing; and Recommended Practices for: Chromium Plating on Steel for Engineering Use; Preparation of Low-Carbon Steel for Electroplating; Preparation of High-Carbon Steel for Electroplating; Preparation of Zinc-Base Die Castings for Electroplating; Preparation of and Electroplating on Aluminum Alloys; Preparation of and Electroplating on Stainless Steel; Preparation of Copper and Copper-Base Alloys for Electroplating. Order your copy from the ASTM, 1916 Race St., Philadelphia 3, Pa.

L—621. Neoprene Sprayed Coatings and Sheet Linings Data Sheet—The MW Protective Coatings Division of Metalweld, Inc., has issued a bulletin outlining the protective qualities of Neoprene in applications affected by sunlight, heat, abrasion, oil, cold and various chemicals. Included in the bulletin is a table on organic chemicals for which Neoprene lined tanks and piping can be recommended. For your copy, use Reader Service Card.

L—622. Folder Describes Metal-Seeded Concrete Flooring—A 3-color, 4-page folder published by the Flash-Stone Co., 3723 Pulaski Ave., Philadelphia 40, Pa., introduces a new industrial

KNIGHT PLATING COMPANY

PRODUCTION PLATING OF SMALL PARTS

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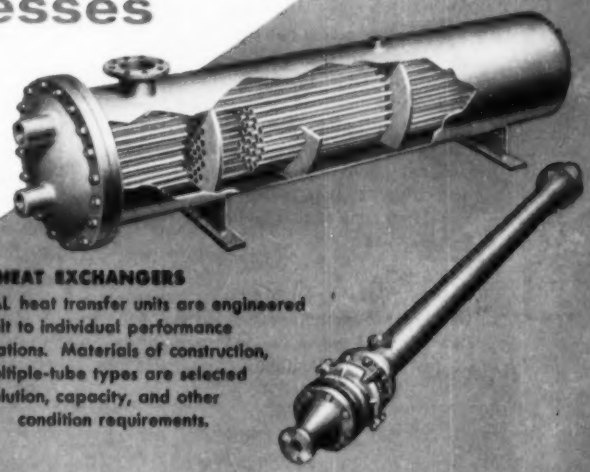
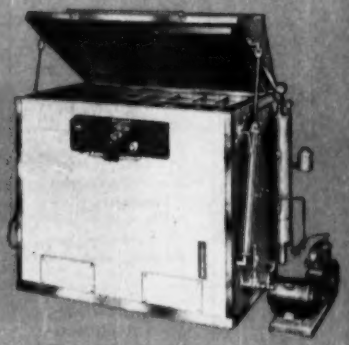
Industrial PRODUCTS

for Metal Finishing Processes

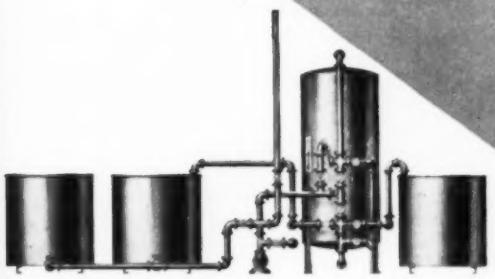


HEAT EXCHANGERS
INDUSTRIAL heat transfer units are engineered and built to individual performance specifications. Materials of construction, single- or multiple-tube types are selected to meet solution, capacity, and other condition requirements.

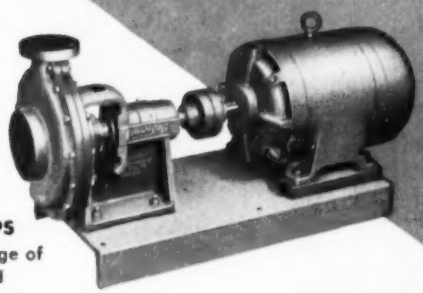
PRESSURE FILTERS
Standard portable and stationary models in capacities from 100 to 15,000 gph. Special filtering systems engineered to meet unusual conditions.



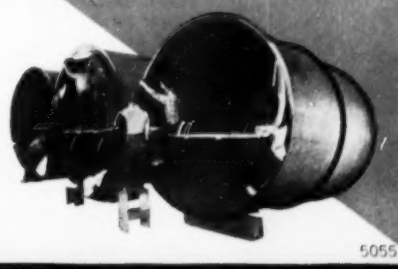
CORROSION TEST CABINETS
INDUSTRIAL corrosion test cabinets are used for either salt fog corrosion or humidity corrosion tests. The salt fog test conforms to the requirements of the Army, Navy, Air Force, the Bureau of Standards, and the recommendations of the A.S.T.M.



DEMINERALIZERS
Ion exchange systems for recovery of valuable metals from rinse water and for selective purification of chromate solutions. Demineralizers available for the supply of chemically pure water in any quantity.



CENTRIFUGAL PUMPS
INDUSTRIAL centrifugal pumps are made in a range of sizes and of cast steel, stainless steel, and rubber-lined cast iron for handling corrosive and noncorrosive solutions.



RUBBER LININGS
An example of INDUSTRIAL vulcanized-rubber lining service. The proper preparation of the surface, the correct compounding of the rubber, its application, bonding, vulcanizing, and finishing assure a lasting lining of rubber for tanks, valves, pipe, fittings, etc.

5055

INDUSTRIAL FILTER & PUMP MFG. CO.
5914 OGDEN AVENUE • CHICAGO 50, ILLINOIS

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS
HEAT EXCHANGERS
CORROSION TEST CABINETS
CENTRIFUGAL PUMPS

Trade Literature

concrete flooring process called Metal-Seeded Dynapakt.

The folder points out that this flooring operation, performed with special power equipment to insure maximum compaction and adhesion of concrete and metal-chip composition, features an 8-inch "veneer" of iron-chip aggregate as a non-spalling, noncrumbling, nonslip armor over fresh Dynapakt concrete topping. For a free copy of this folder, use Reader Service Card.

L—623. Catalog on Magnetic Separators—Complete information on the construction and use of magnetic separators for fast and easy handling of steel sheets and plates is included in the new four-page catalog recently published by Basco Manufacturing Co., 3 Woodside St., Stamford, Conn.

In addition to providing complete information about Basco Separators, the booklet describes how these units speed up production, reduce damage to machinery and eliminate injuries to operators. For your copy, use Reader Service Card.

L—624. Polyester Resins—Latest information about formulations and properties of Bakelite polyester resins and their use in the manufacture of reinforced plastic structures is presented in a revised edition of the booklet, "Bakelite Polyester Resins for Reinforced Plastics," published by Bakelite Co., a Division of Union Carbide and Carbon Corp., 300 Madison Ave., New York 17, N. Y.

General descriptions of Bakelite polyester resins and valuable information on compounding, reinforcing materials, mold release agents and fabrication of reinforced plastics are included in the booklet, which also lists a number of secondary materials suppliers.

General details on production methods and equipment are given for casting and for diaphragm, rubber plug and matched metal molding. Wet and dry machining operations for fabrication also are discussed. Copies of this booklet may be obtained by using Reader Service Card.

L—625. Dust Control Literature—Simplified dust control system for collecting 3 different kinds of dusts in a small shop is the subject of a new bulletin by Aget Detroit Co., 801 Main St., Ann Arbor, Mich.

It illustrates installation and relates how (a) emery dust, (b) dust from a rough grinding operation, (c) lint from a buffer are controlled by a standard Dustkop dust collector, which was obtained from stock and installed by the shop's maintenance man. For your copy of the bulletin, use Reader Service Card.

L—626. Demineralizer Catalog—Barnstead Still & Sterilizer Co., 228 Lanesville Ter., Forest Hills, Boston 31, Mass., has announced the publication of a new 20-page catalog which describes the firm's entire line of mixed-bed, two-bed, and four-bed demineralizers for laboratory and industrial use.

The new publication, which contains many photographs, drawings, and diagrams, explains in detail the principles, construction, and operation of both mixed-bed and multibed demineralizers, ranging in capacity from 5 gph laboratory units to industrial installations producing 2500 gph. It gives dimensional and performance data on all models and explains the difference between distilled and demineralized water, considerations affecting selection of proper equipment for a given job, and the actual installation and operation of Barnstead demineralizers. For your copy of this catalog, use Reader Service Card.

L—627. Selenium Rectifiers—United Chromium, Inc., 100 E. 42nd St., New York 17, N. Y., has made available a new illustrated 4-page folder that describes the complete line of Unichrome selenium rectifiers for plating and anodizing. A new feature on these rectifiers is a set of pin jacks for easy taking of electrical readings which make it possible to determine the efficiency of the equipment and thus to forestall trouble. Basic, self-contained, and remote control Unichrome selenium rectifiers with cycling, standard or extra heavy duty ratings, and with water cooling for corrosive locations are described. Copies of the bulletin may be obtained by using Reader Service Card.

YES
NO
Is It Safe For the Metal or Metals You Clean? (No Attack on the Metal)
Does It Clean Chemically as well as Electrolytically? (Speeding and improving the cleaning operation)
Can Its Solutions Carry High Current Densities? (Insuring fast, effective cleaning)
Can It Be Used for Either Anodic or Cathodic Cleaning? (Providing flexibility in the cleaning operation)
Does It Provide Long-Lived Solutions? (Assuring material improvement in cleaning costs)
You can check every "YES" for the Right Magnus Electro-Cleaner!
There's a cleaner in the Magnus line of Electro-Cleaners best qualified to give you fast, thorough, low-cost electro-cleaning on aluminum, die-cast, steel or soft metal parts.
Ask for details on test-runs for YOUR products in the Magnus Laboratory to determine the right cleaner for your electro-cleaning operations.
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World's Finest Anode for Chromium Plating

TRAMER

"COPPER CORE" Chromium Anode

"Copper Core" is chemically bonded homogeneously to the lead for its entire length. The entire hook is lead covered for additional protection.

- **This Anode** will conduct 250 amperes based on copper area alone.

Natural flow of current makes entire surface self-cleaning, insuring complete saturation, instant distribution of current, and unusual throwing power. Greatly reduces plating time for a given thickness of deposit.

- **"Copper Core"** distributes current equally throughout the entire length of anode.

The anode is insulated above and below the solution level—which prevents flow of heavy surface currents and burning off at solution line. Conductivity is uniform at all solution levels, regulated only by the cathode depth.

- **"Copper Core"** and point current construction, aids in immediate coverage.

A one-piece copper hook maintains perfect contact —no heating at point of contact, no current failures to solution. "Copper Core" Anodes do not warp out of shape.

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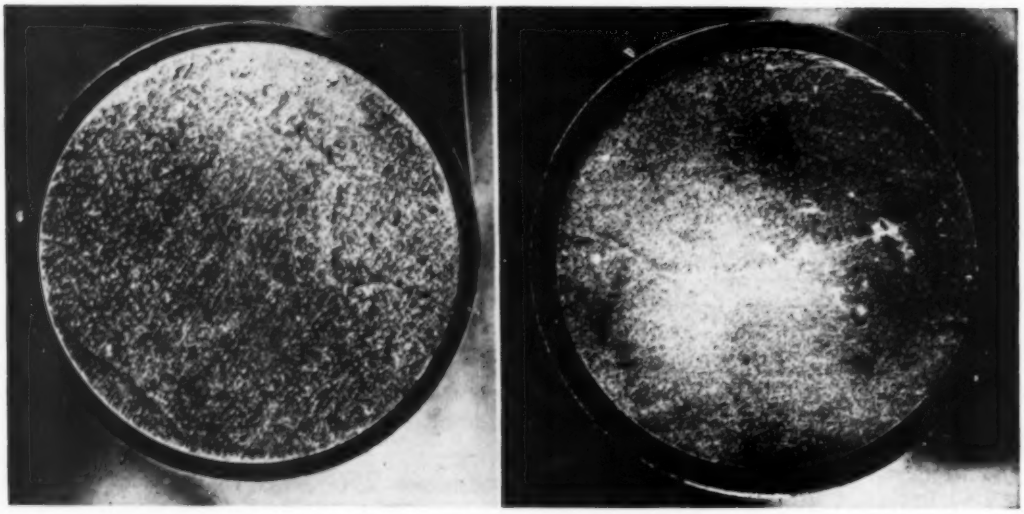


Macrograph of chromium plated steel rod, plated in ordinary solution for 16 hours. Deposit built-up to 0.016" on radius.

Identical rod, plated in SRHS Solution, under identical conditions, built-up a 0.0225" deposit on the radius – over 40% more. Such speed cuts cost, increases capacity without extra expense.

Are you taking advantage of these many ways to cut plating expenses?

Savings in time, labor, materials, and equipment are made possible with United Chromium's aid

A LEADER in the fight against high finishing costs is United Chromium which has developed many ways to make plating operations more efficient and profitable.

WAYS TO SAVE IN CHROMIUM PLATING

Chromium plating costs can be cut by *reducing* salts consumption, power needs, lost production time, rejects, and special racking procedures–and by *increasing* plating speed and tank load size.

All these methods of cost reduction are made possible through the features of high-speed self-regulating chromium plating systems developed by United Chromium. Unichrome SRHS Chromium Baths are regularly used for all types of decorative and hard plating. Enthusiastic reports from the field say the SRHS systems not only save money but improve plating quality as well. They cut plating time up to half, minimize misses and burns, use economical concentrations, remain in top plating balance.

WAYS TO SAVE IN COPPER PLATING

Major opportunities for reducing copper plating expense lie in ending or simplifying buffing by depositing a more uniform plate. Reducing the need for treating of the plating wastes can also save. Faster plating helps, too.

New addition agents for use with Unichrome Pyrophosphate Copper have eliminated buffing for many users, made it easier for others who prefer to buff copper rather than the base metal or subsequent deposits. Plating speed has been increased – by as much as 20% in some cases. Costs for waste disposal facilities are also being cut because the bath contains no cyanide.

WAYS TO SAVE ON NICKEL PLATING

Decreasing the rate of chromium rejects due to nickel passivity, reducing downtime for purification of nickel solutions, and using more stable addition agents are important means for lowering bright nickel costs.

Unichrome Bright Nickel was developed especially for these characteristics. In 4 years of actual commercial operations, it has proved that its greater receptivity

for chromium deposits, more stable addition agents, and exceptional tolerance for impurities do cut nickel plating costs. Through its ability to stay on the job, Unichrome Bright Nickel has become known as the "work horse" by plants that previously used other bright nickel processes.

THE WAY TO SAVE ON ANODES

A chromium plating anode lasts longer when its entire surface is active – even that part facing the tank lining. This not only avoids costly corrosion, but also helps improve current distribution, reduce misplates.

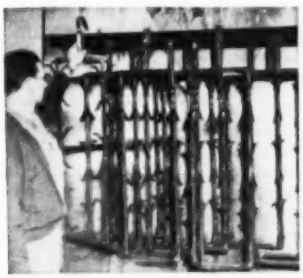
A new development by United Chromium delivers such performance. Unichrome Round Anodes offer greater anode activity and therefore longer, more economical service. With their cylindrical and more rigid design, they can end warpage problems and distribute current better. Fewer anodes can therefore be used.

An innovation in chromium plating anodes – a round shape that provides greater anode activity.

THE WAY TO SAVE ON RACK COATINGS

Plastisol rack coating builds up substantial body and resiliency and offers longest service. Also easier and more economical to apply, it provides a positive means for lowering rack insulation and maintenance costs.

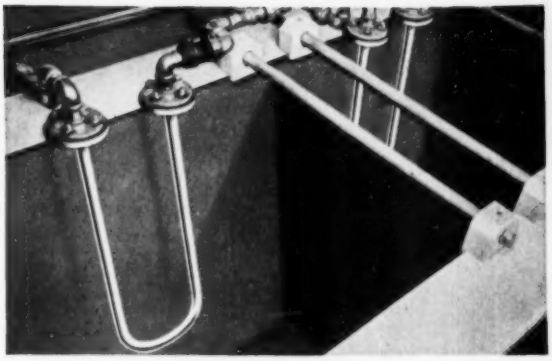
In its many years of use, Unichrome Coating 218X has established a remarkable record for economy. It defies all plating and cleaning solutions, even vapor degreasing cycles. It guards against solution contamination since it contains no harmful ingredients and is formulated not to chip, crack, blister or form pockets.



Large racks ready for heavy duty as they emerge from the baking oven with tough Unichrome Coating 218X protection.

WAYS TO SAVE ON CHROMATE TREATING

Economy in chromate treating comes from using the process best suited to the requirements. Factors to be considered are whether processing will be manual or automatic, size of production, equipment available, and type of finish required.



ECONOMY IN HEATING – A Unichrome Tantalum Heating Coil like the above paid for itself in 6 months by eliminating former downtime and maintenance with lead coil in chromium solution. It will still be paying a bonus years later.

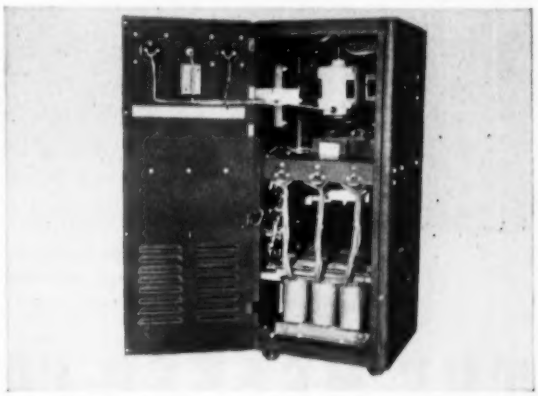
A complete line for treating zinc and cadmium is offered by United Chromium to produce clear, black, olive drab, yellow and even brass colored finishes. Both chemical Unichrome Dip processes and electrochemical Anozinc* processes are available to meet requirements.

Trade Mark

WAYS TO SAVE ON EQUIPMENT

Obviously, getting the *right* equipment for the job is a first requirement. Then comes the right capacity, in order to avoid the economic waste of too much and the production losses of too little. Quality shouldn't be overlooked, either – it means lower cost per year. And finally – an efficient setup of the overall operation.

The line of Unichrome equipment accompanied by United Chromium's experience and technical aid can help you satisfy these requirements. Quotations promptly handled.

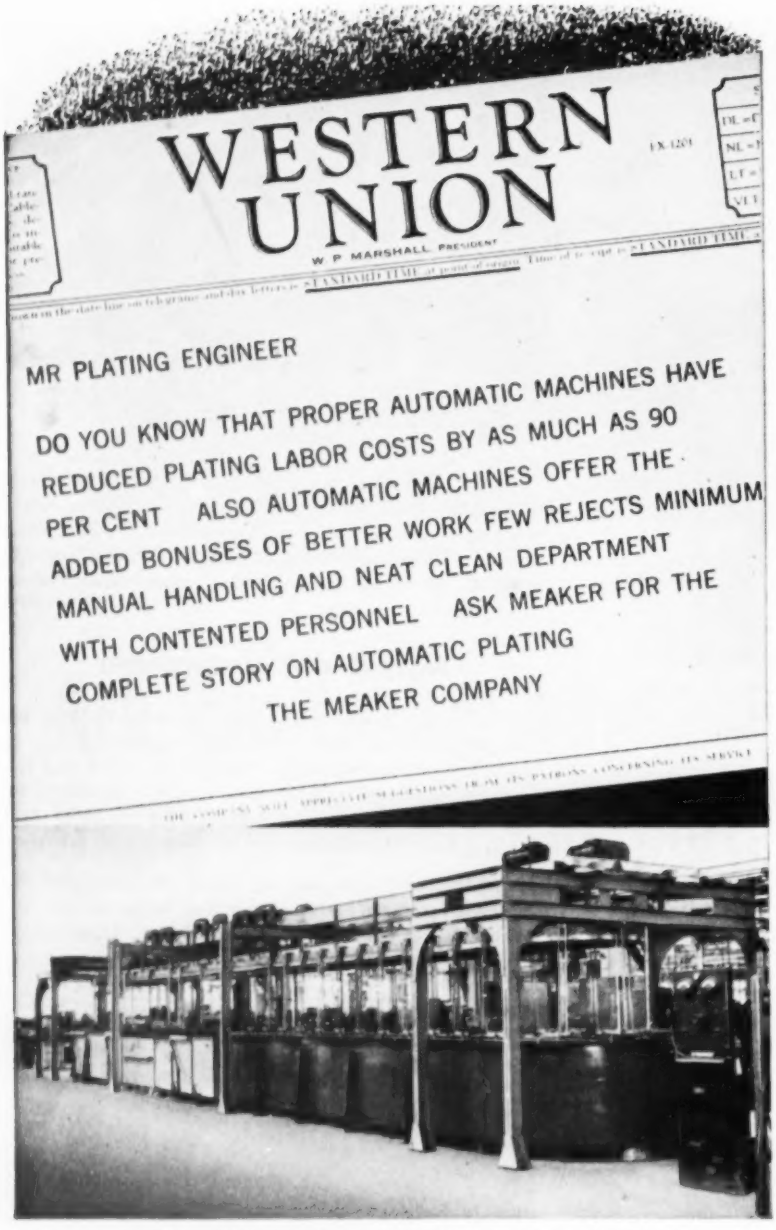


Inspection of the interior of a Unichrome Rectifier gives good visual evidence of superior quality.

To get more information and answers to your questions, write your nearest United Chromium office.

UNITED CHROMIUM, INCORPORATED

100 East 42nd Street, New York 17, N. Y. • Detroit 20, Mich. • Waterbury 20, Conn. • Chicago 4, Ill.
Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.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DO YOU KNOW THAT PROPER AUTOMATIC MACHINES HAVE
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PER CENT ALSO AUTOMATIC MACHINES OFFER THE
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One of the many designs of Meaker Full Automatic Plating Machines custom built for highest production at lowest unit cost in plant of large automotive parts manufacturer.

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Strip Steel Plating Equipment • Wire Galvanizing Equipment
Pickling Machines • Process Conveyors
Motor Generators and Rectifiers

4454

Special Machines for the Unusual Requirements

Equipment and Supplies

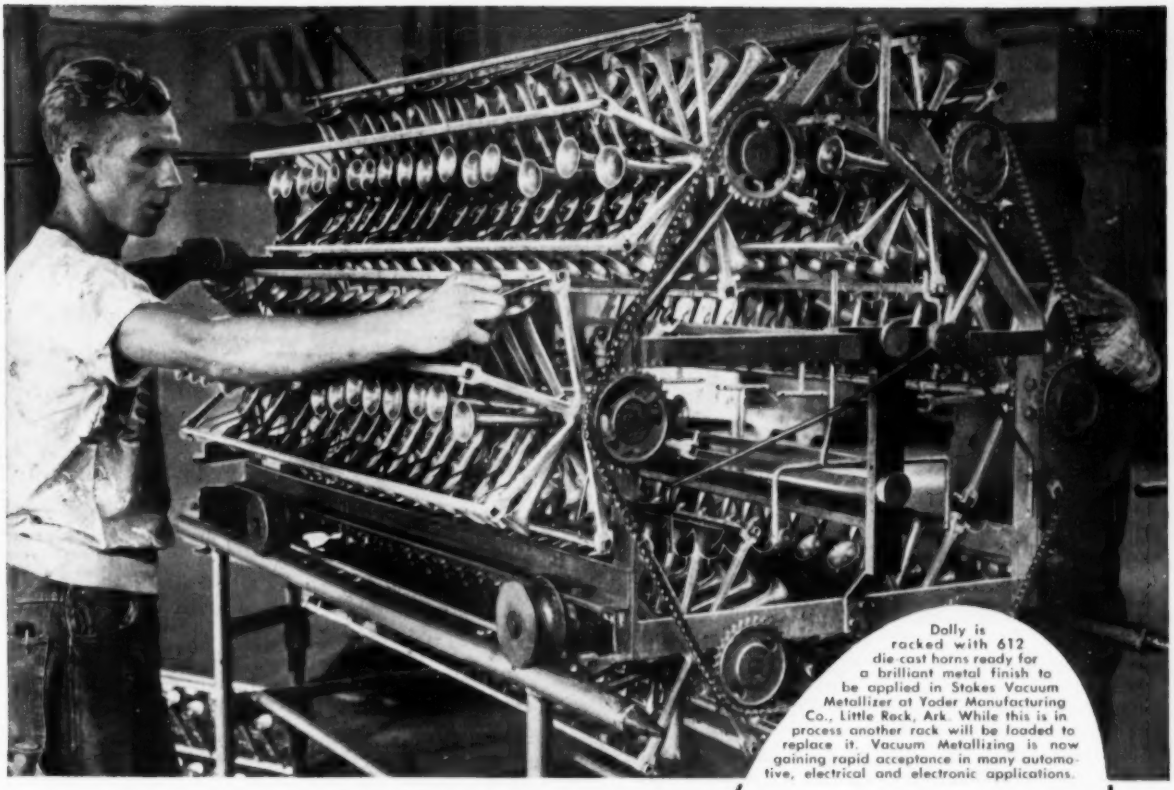
E—628. Thickness Tester—Platers Research Corp., 59 E. Fourth St., New York 3, N. Y., has introduced a new production tool for metal finishers in the form of a thickness tester called the pocket Handi-Gage.

The Handi-Gage is a magnetic instrument similar in size and shape to the familiar automobile tire gauge. When the magnetic end of the Handi-Gage is applied vertically to the surface to be tested and slowly pulled away, a calibrated inner stem appears. The distance the stem travels before the magnet releases itself from the surface is a measure of the thickness of the coating.

The Handi-Gage will test the thickness of electroplated cadmium, copper, brass, silver, zinc, tin, lead, nickel, zinc-tin and lead-tin alloys on steel, as well as hot-dipped tin and zinc. It is ideal for testing the thickness of paint, plastic lamination, enamel and lacquer coatings on steel. It will test thickness from 0.0001 inch to 0.015 inch. For more information on this product, use Reader Service Card.

E—629. Liquid Pickle Control—Oakite Products, Inc., 140 Rector St., New York 6, N. Y., have announced the development of Oakite Pickle Control No. 5, a liquid inhibitor for sulfuric, hydrochloric or phosphoric acid or mixtures thereof. It provides a controlled foam blanket on pickling solutions in addition to performing its inhibiting function. It is designed for use in continuous steel strip mills where addition of an inhibitor through proportionating equipment is preferred, and in batch pickling operations because of the ease of making additions.

Pickle Control No. 5 is a viscous red-



Dolly is racked with 612 die-cast horns ready for a brilliant metal finish to be applied in Stokes Vacuum Metallizer at Yoder Manufacturing Co., Little Rock, Ark. While this is in process another rack will be loaded to replace it. Vacuum Metallizing is now gaining rapid acceptance in many automotive, electrical and electronic applications.

In Minutes... Vacuum Metallizing will Metal-coat these 612 Die-cast Horns

Metallic finishes in many metals and many colors are now applied by Vacuum Metallizing and the product is ready for lacquering and packaging without hand work. No plating or finishing plant can afford to ignore the tremendous opportunities which Vacuum Metallizing creates.

Ornaments and display materials, toys, trophies, furniture handles, emblems, jewelry, nameplates, reflectors and many other metal parts are now largely vacuum metallized. Automobile parts are a new and fast-growing market. Electrical and electronic parts offer unlimited possibilities. Some installations deliver as high as 100 loads of finished parts per 24-hour day from a single Stokes Vacuum Metallizing unit without use of specially skilled labor. Stokes trains your workmen and you start into production.

Units of 24, 36, 48 and 72-inch diameter are available, some fully automatic in operation. Floor space requirements are low, as these are integrated "package" units of the fastest and most efficient type.

Stokes Laboratory will metallize your samples, evaluate your application, recommend techniques to be employed, plan cycles, report on costs . . . and share with you the benefits of Stokes' 40 years of leadership in high-vacuum technology.

Write today for a comprehensive brochure, "Vacuum Metallizing Today," which describes the applications and techniques of Vacuum Metallizing.

F. J. Stokes Machine Company
Philadelphia 20, Pa.

STOKES

STOKES MAKES: High Vacuum Equipment, Vacuum Pumps and Gages / Industrial Tabletting, Powder Metal and Plastics Molding Presses / Pharmaceutical Equipment

WE CUT OUR OWN ANALYSIS TIME BY MORE THAN 50%

right in our home plant!

We do a great deal of electro-plating at the Patent Button Company—not only on our own products, but also on contracts for many other firms—much of it to strict Government specifications. We plate with copper and zinc cyanide, cadmium, brass and nickel solutions.

Analyses in 20 Minutes!

Before we developed the Patwin C-1 Electro-Polarizer, we spent an average of 60 minutes in analyzing a typical solution by chemical methods. Now, with this instrument, analyses of very high accuracy are completed in 15-20 minutes! Our production has been speeded considerably, and we want to pass the news along to other electro-platers facing the same problem.

Top Quality! Low Cost!

The Patwin C-1 Electro-Polarizer needs only a standard 110 A/C outlet—comes in a steel case which takes up only 6 square feet of bench space—incorporates the finest components we're able to lay our hands on (the galvanometer, for instance, is GE's high sensitivity portable model)—and costs about $100 less than any other polarographic instrument we've ever heard of!

The Patent Button Company

PATWIN INSTRUMENTS Division
THE PATENT BUTTON COMPANY, Waterbury 20, Conn.

Please send me more information about your Patwin C-1 Electro-Polarizer.

NAME_____

FIRM_____

ADDRESS_____

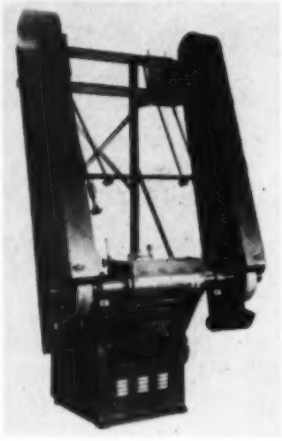
CITY_____ STATE_____

INDICATE A 645.

Equipment and Supplies

brown liquid with a characteristic odor. It has a *p*H that is approximately neutral and a bulk density of 8.74 pounds per gallon. Normal range of the inhibitor concentration is said to be 0.1 to 1 per cent by weight of concentrated acid in the solution, with the pickle control being added either manually or by proportionating equipment to the acid solution at its operating temperature. Large and small drums of 400 and 115 pounds respectively are standard packages. Additional information regarding this new, liquid pickle control will be sent, without charge to readers. Use Reader Service Card.

E—630. Polishing Lathe and Abrasive Belt Backstands—Pictured here is a modern, compact and space-saving Hammond Grinder-Polisher using abrasive belts.



The mounting structure is attached to the base of the polishing lathe to which the backstands are mounted—instead of the more conventional method of mounting the backstands in back of the lathe. Abrasive belts up to 14 feet long can be used.

The polishing lathe is the model VRO variable speed (1500 to 3000 RPM) and the backstands can be either spring or air-tensioned models. The same arrangement can be furnished with most Hammond polishing lathes. For further information, write to Hammond Machinery Builders, Inc., 1613 Douglas Ave., Kalamazoo, Mich., or use Reader Service Card.

E—631. New Infrared Lamp—Development of a revolutionary new type of infrared lamp, "of tremendous potential" for scores of heating, drying, baking, cooking, and other uses, has been announced by General Electric's Lamp Division.

℞ New **PLA-TANK**® for Vastly Increased Chemical Resistance at Higher Temperatures

Polyesters by Prescription

NOW . . . The Chemical Corporation research and development program makes possible a "prescription" type of PLA-TANK formulation for *specific problems.* It is literally possible for our technical service engineers to prescribe one of a number of vastly improved combinations of PLA-TANK material for liquid contact applications never before considered suitable for ordinary polyester plastics.

For example, tests prove that all *new* PLA-TANK electro-platers' tanks now offer far better performance on hot sulphuric, nitric, phosphoric and chromic acid solutions than any other commercially available fiber glass tank.

Remember — All Polyesters are not Alike

PLA-TANK achieves these vastly improved resistances by carefully controlled variations in either the resin or fiber or both. Now more than ever "*all polyesters are not alike*" and COMMONLY PUBLISHED STUDIES OF POLYESTER PERFORMANCE MUST NOT BE APPLIED TO PLA-TANK SPECIAL MATERIALS.

Intensive research and testing covering thousands of samples have isolated and selected those alkyds which show highest chemical resistance to various specific agents and matched them with the most effective cross links.

NOW . . . you can "prescribe" new PLA-TANK for your own *specific* needs, knowing your tanks will have increased usefulness and longer life.

Benefit from continuous research and development with PLA-TANK — *first* in the field, and still the leader.

WRITE TODAY — mentioning your requirements, for complete data sheets on new PLA-TANK material. P-18

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LIQUISPRAY

BUFFING COMPOUND

Here's why "LIQUISPRAY" saves you money over bar compounds

- No crumbling or nubbins—all the compound goes on the wheel
- Same regulated quantity applied
- No machine downtime to change bars

Here's what "LIQUISPRAY" can mean to you

- Increased operator efficiency
- More uniform finish and fewer rejects
- Compound costs cut up to 50%
- Tremendous increase in buff life

Here's why you should use "LIQUISPRAY"

- Abrasives will not settle
- No fire hazard
- No clogging of idle guns
- All the compound sticks to the wheel
- Leaves work free of dirt and easy to clean prior to plating

Choice of heavy cut, cut and color, or color in either tripoli or stainless steel grades

We invite your inquiry specifying your particular requirements. Samples available.

GEORGE A. STUTZ MFG. CO.

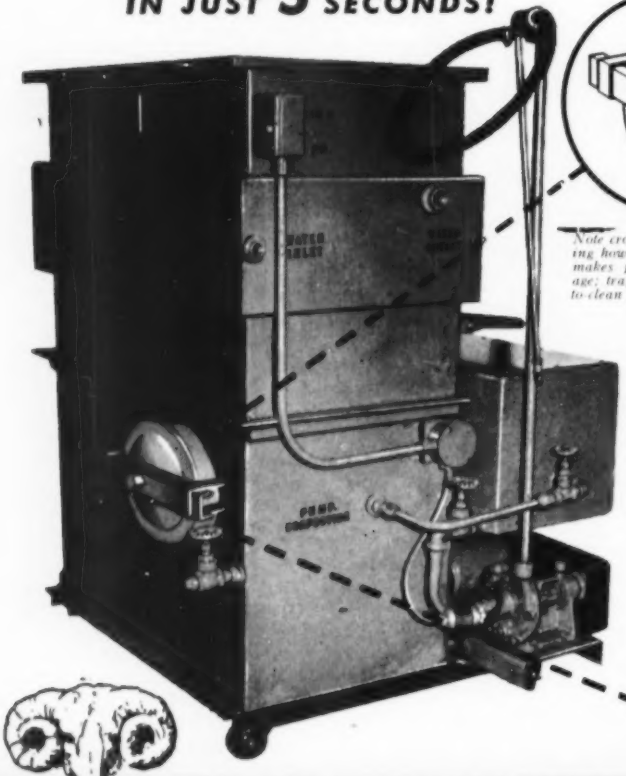
1643 CARROLL AVENUE, CHICAGO 12, ILL.

"Complete metal finishing equipment and supplies"

YOU'LL SAVE COSTLY HOURS OF LABOR WITH RAMCO® 1-BOLT ACTION DOOR ON RAMCO VAPOR DEGREASERS

MANUALLY OPERATED, CONVEYORIZED

A TWIST... A TURN... IT'S OPEN IN JUST 5 SECONDS!



Note cross section above showing how Ramco 1-Bolt design makes possible 100% drainage; traps all sludge in easy-to-clean pocket.

Degreasers in normal operation usually have to be cleaned out once a week. Multiply the time it takes to open and close a 16 to 22 bolt door, and you'll tally up a tidy sum of avoidable labor cost.

Take into account too that the RAMCO 1-BOLT ACTION door may be removed time and again without gasket replacement. Contrast this with other types that have to have gaskets replaced every two to three cleanouts.

SEE US AT AES CONVENTION JULY 12-15, HOTEL STATLER, VILLAGE ROOM

RAMCO

RAMCO EQUIPMENT CORP.
1373 LAFAYETTE AVE.
NEW YORK 59, N. Y.

FREE SURVEY

Please have the RAMCO man in our area arrange to survey our operations to effect cleaning cost economies.

NAME _____

COMPANY _____

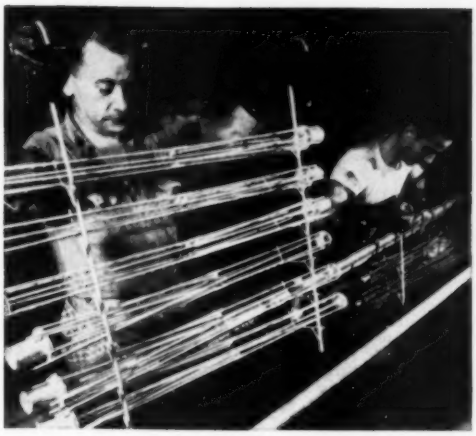
ADDRESS _____

CITY _____ ZONE ____ STATE ____

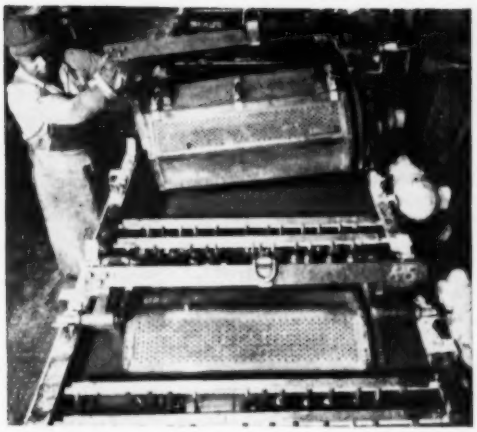
Typical cleanout door with 22 bolts . . . usual length of time to disconnect steam lines, loosen frozen bolts, remove all bolts, open door and replace with required new gasket — approximately 3 to 4 hours.

RAMCO EQUIPMENT CORP.
Div. of Randall Manufacturing Co., Inc.
1373 LAFAYETTE AVE., NEW YORK 59, N. Y.

Distributors in principal cities. Territories open.



Cadmium plating umbrella frames. One large job plater turns out as much as 200,000 lbs. of work a day and reports, "No operating troubles in 27 years of plating with 'Cadalyte' cadmium plating materials."



Zinc plating steel casters. One of the world's largest manufacturers of casters uses "Zin-O-Lyte" zinc plating chemicals to plate a thousand different parts. They get bright, uniform results directly from the bath—without bright dipping!

Why "Cadalyte" and "Zin-O-Lyte"

(CADMIUM PLATING CHEMICALS) (ZINC PLATING CHEMICALS)

Produce Bright, Uniform Plating

"Cadalyte"* is the complete plating salt containing all the chemicals you need for lustrous cadmium deposits of any required thickness.

A "Cadalyte" bath has excellent throwing power and high cathode efficiency. This assures you consistently bright cadmium deposits of high uniformity directly from the bath. And because the "Cadalyte" bath is easily operated and maintained, production is simplified.

While designed for the preparation of new baths, "Cadalyte" cadmium plating salt is equally effective in replenishing the metal content of existing baths. And you can easily maintain the high covering power of the bath at its peak by using "Cadalyte" Brightener.

"Zin-O-Lyte"* zinc plating chemicals are specially prepared to give you brilliant rust-resistant zinc deposits directly from the bath—*without bright dipping!*

"Zin-O-Lyte" zinc plating baths are easily made up from prepared salts . . . have excellent operating efficiency at both high and low current densities. Economical to maintain, these baths are effective for all types of zinc plating, but are particularly effective for barrel plating. And you can get bright, blue-white zinc deposits on parts of all shapes and sizes.

So for high quality zinc plating results, at a low cost—use "Zin-O-Lyte". You'll find that you can save time and labor over any plating range.

*REG. U.S. PAT. OFF.

Du Pont plating chemicals are available for practically every cyanide plating requirement. Your Du Pont representative will be glad to help you select the right one for your plating job. For prompt advice on plating chemicals or problems, contact your nearest Du Pont district office.

DISTRICT OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • El Monte (Calif.) • Kansas City† • New York • Philadelphia

†HANADA & PAGE, INC.

Chemicals • Processes • Service

for **ELECTROPLATING**

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING

...THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept. P - 64, Wilmington 98, Del.

Please send me more information on Du Pont Plating Chemicals—properties, advantages and recommended procedures. I am interested in the following types of plating:

☐ Cadmium Plating ☐ Tin Plating
☐ Zinc Plating ☐ Copper Plating

Name _____

Firm _____

Street & No. _____

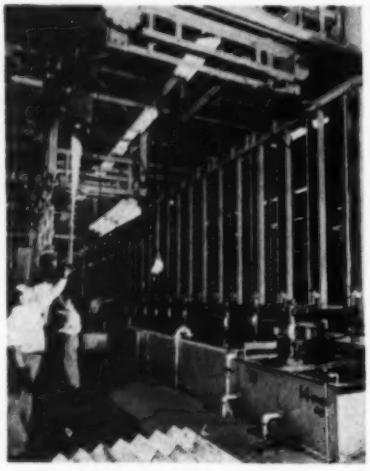
City _____ *State* _____

Equipment and Supplies

It is a radical departure from any previous infrared lamp in two respects. It comes in a compact tubular shape, slightly larger in diameter than a cigarette, rather than in the shape of a conventional bulb. And rather than regular or heat-resistant glass, the tube is made of fused translucent quartz.

Producing more than four times the energy concentration delivered by the popular 250-watt infrared bulb, the slender quartz lamp has "amazing" ability to withstand high temperatures and the shock of violent temperature changes. Even when the tube is heated to a cherry red, it can be doused in water or, as a more severe test, may be touched by a piece of ice, without cracking. For more information on this product, use Reader Service Card.

E—632. Big New Plating Conveyor Recycles Work, Transfers It Automatically—A new Hanson-Van Winkle-Munning elevator-type plating conveyor at Hamilton Standard, division of United Aircraft Corporation, Windsor Locks, Conn., has the highest vertical lift in the world. It is zinc plating big steel propeller blades 30 to 50 per cent faster than a former manual handling system. In the photo, a blade has just been transferred from the plating conveyor via the transfer



conveyor on top. This blade will be inspected and scrubbed down as are the blades in the background, then put back on the plating conveyor for recycling through the zinc plating bath. Unusual feature of the operation is the automatic transfer of blades from and back to the plating conveyor. This transfer conveyor is selective in that it only picks up those blades that are supposed to be recycled. Other blades remain on the oval-shaped plating conveyor and are delivered to the unloading station in back of the zinc plating tank.

Controlling transfer to the monorail is a mechanical counter located on top of the blade-holding fixture. It engages a limit switch on the transfer conveyor. The counter is set for the proper number of recycles prior to loading the blade on the conveyor. Blades are recycled up to six times. Plating thickness and number of recycles are determined after test balancing the blades.

This H-VW-M plating conveyor has a lift of 10½ feet. It is operated hydraulically and has provisions for bypassing or delaying set-down over any station in the plating cycle. For more information on this and other automatic plating equipment, use Reader Service Card.

E—633. Chromate Reducer For Alkali Cleaning Solutions—Enthone, Inc., 442 Elm St., New Haven, Conn., has announced a new product called "Chromekill 4A" for destruction of hexavalent chromium in alkaline cleaning and plating solutions. If alkaline cleaners or plating solutions become contaminated with chromic acid or chromates, serious diffi-

Only PARAMOUNT Felt Wheels do so many finishing jobs so well

Just 1 PARAMOUNT Wheel does all three:

BUFFING

Choose a Paramount Felt Wheel for your highlight buffing and enjoy finishes produced to **your** specifications . . . and get longer trouble-free service from your wheel too! Or use the **same** wheel for —

POLISHING

Set up your wheel with abrasive grains (120-320 grit) for streakless polishing or with greaseless compounds for satin finishes. Or use your wheel as a —

CONTACT WHEEL

Whether you're using belts for polishing or finishing, the wide range of sizes and densities of Paramount Felt Wheels make them ideal for your most exacting work.

Learn what the versatility of Paramount Brand Wheels can mean to your work and your finishing costs. Call your Supply House today for details.

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Just off the press — a new 12-page catalog crammed with authoritative finishing information. Send for your free copy today.

Boacon Felt Company

407 WEST WATER STREET • TAUNTON • MASSACHUSETTS

Established 1825 "Felt Does It Better"

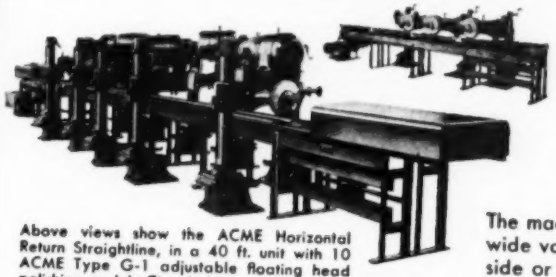
ACME *Automatics* PUT POLISHING *and* BUFFING OPERATIONS *on a low cost production basis . . .*

ACME *Semi-Automatics*

ACME Semi-Automatics are built to "deliver the goods." They can be fully relied upon to cut finishing costs, maintain production levels and stand up under long hours of operation!

The three ACME Semi-Automatics above are from left to right, the ACME A-2, a 2 spindle hand indexing machine for polishing and buffing cylindrical parts up to 12" diameter . . . the ACME L-4, a 4 spindle automatic indexing machine with a normal range of 250 to 400 indexes per hour . . . and the ACME D-10, an oscillating machine for finishing out of round parts. These machines are proved producers.

WRITE FOR CATALOG ILLUSTRATING WIDE RANGE OF TYPES



Above views show the ACME Horizontal Return Straightline, in a 40 ft. unit with 10 ACME Type G-1 adjustable floating head polishing and buffing lathes . . . and a 20 ft. unit with 3 ACME Type G-3 lathes.

ACME *Straight Lines*

ACME Straightlines provide effective solutions to many finishing problems. ACME progressive experience and engineering assure dependable performance at high production levels.

The machine illustrated is unusually versatile and adaptable to a wide variety of work. It may be loaded or unloaded from either side or either end. Polishing and buffing heads may be used on either or both sides and may vary in number to suit the required production and finish.

WRITE FOR OUR STRAIGHTLINE CATALOG ILLUSTRATING OTHER TYPES

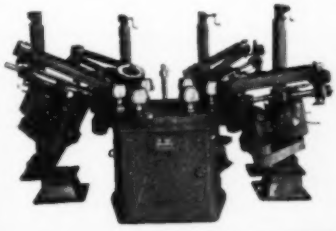
ACME *Rotary Automatics . . .*

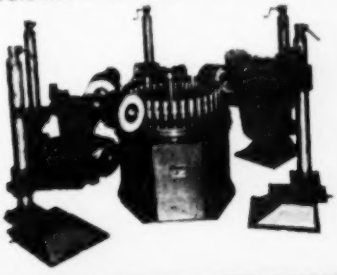
ACME 40" Rotary with 6 station indexing table and 4 ACME Type G-1 lathes with belt arm attachment. One second indexing time . . . up to 1800 indexes per hour. Acme Indexing Rotaries are available in table sizes from 18 in. to 10 ft. diameter.

ACME 10 ft. Combination Rotary . . . for continuous operation using 24 continuously revolving spindles or for 12 station indexing operation using every other spindle. One second indexing time . . . up to 1200 indexes per hour.

ACME 50" Continuous Rotary Automatic with 40 spindles equipped with 4 Acme Type G-3 heavy duty 15 H.P. polishing and buffing lathes with inverted spindles. ACME Continuous Rotaries are available with tables up to 24 ft. diameter.

WRITE FOR ROTARY CATALOG





for POLISHING • BUFFING
GRINDING • MICRO-FINISHING
DE-BURRING • WIRE BRUSHING

SPECIAL MACHINERY — AUTOMATIC BUFFING MACHINES

ACME *Manufacturing Co.*

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

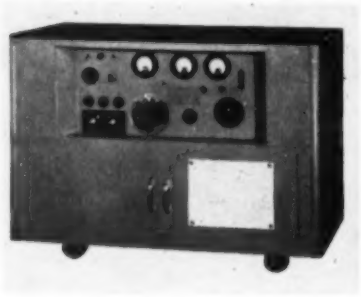
1400 E. 9 MILE RD., DETROIT 20 (Ferndale) MICH.

Equipment and Supplies

culty usually is experienced in the plating cycle. These difficulties include dull plate, poor throwing power, or no plate at all, blistering and peeling. As little as 0.005 oz/gal of hexavalent chromium will cause trouble.

Chromekill 4A was designed to give a dual action. It contains materials for fast reduction of hexavalent chromium to the harmless trivalent chromium state, and it also contains more stable reducing agents to give prolonged protection. The material is a fine free-flowing powdered mixture and is used in concentrations of the order of ¼ oz/gal. Full information on this product is available by using Reader Service Card.

E—634. Compact Unit Provides Battery Power and Taper Charger—A mobile battery power supply and a selenium

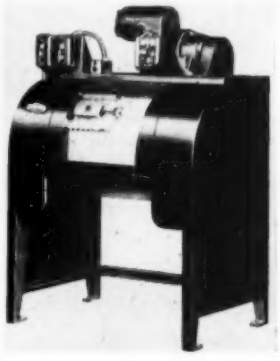


rectifier taper charger consolidated into a single unit, provides d-c power from 2 to 30 volts and completely adjustable and metered charging. The unit now is manufactured by Bart-Messing Corp., 229 Main St., Belleville, N. J.

It incorporates the required facilities for both laboratory and production testing of electrical equipment in accordance with rigid military specifications. It has wide industrial application for precision testing as well as uses in educational institutions.

Battery output accurately metered for both voltage and current, adjustable from 2 to 30 volts, is obtainable at the output binding post terminals by means of tap switch and rheostat adjustments. The charging rate is completely adjustable and metered, to operate from a 110 or 220 volt single phase a-c source. Input circuit protection is provided by a circuit breaker and fuses. Double throw toggle switch connects the load across the battery supply or connects the batteries to the charger circuit. For more information on this unit, use Reader Service Card.

E—635. Barrel Finishing Machine—Almco Supersheen, Queen Stove Works, Inc., Albert Lea, Minn., has just introduced a new and improved model DB-50 barrel finishing machine.



This new compact model has been designed to include all the superior features of larger models, but with an entirely new capacity for intermediate size runs, thus saving capacity of larger units for full batches.

All barrel finishing operations can be performed in this machine, including grinding, burring, descaling, polishing and cleaning. Certified cost savings up to 95 per cent over other methods are reported. For more data on this equipment, use Reader Service Card.

E—636. Grinding Machine—Norton Co., Worcester, Mass., announces a new universal grinding machine, the 12-inch Type U-4. The new machine has been designed to provide extra versatility through simplified setups and fast, precise grinding action for limited production items.

The principal new feature is the swiveling headstock which has a dog-drive

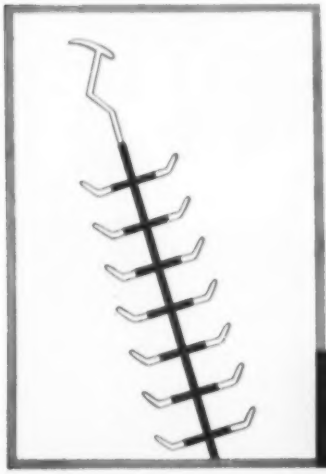
4 is a better "Point" than 7

when you're playing with

RACK COATINGS

It just isn't natural to make a point of dipping a rack seven times to get a coating thickness of 20 mils — when you can do it with four!

New Tygon Air-Dry Rack Coating 277 builds a film thickness of five mils per dip. This new "higher-solids-content" coating cuts rack maintenance costs way down — saves by cutting rack handling time almost in half — saves by cutting "down-time" for rack recoating — saves by increasing plating cycles per rack.



PLACE A TRIAL ORDER TODAY

See for yourself why electroplaters who have tried Tygon 277, say — "the finest rack coating we've ever used."

275-D

U. S. STONEWARE CO.
AKRON 9, OHIO
PLASTICS AND SYNTHETICS DIV.

MITCHELL-BRADFORD

. . . a name synonymous with Quality and Service which guarantees continued and trouble-free production.

Technical literature and bulletins on any of the following products available on request.

BLACK MAGIC Black Finish for Steel

BLACK MAGIC Black Finish for Zinc

BLACK MAGIC Black Finish for Cadmium

BLACK MAGIC S.S. Black Finish for stainless steels, cast and malleable irons

MAGIC NEUT Neutralizer after Black Oxide finishing

WITCH DIP REGULAR Semi-drying wax finish

WITCH DIP #2 Gloss, semi-gloss, dull, hard drying wax finish

WITCH OIL Water displacing, rust preventative

WITCH OIL "B" Heavy duty, water displacing, rust preventative

PIK-AIDE Pickling addition agent

QUICK PIK Dry acid

COMPOSITION D Rust preventative, solvent, detergent, cleaner, rancidity retardent

MAGIC DRY A plating necessity

MAGICLENE #2 Rust preventative, rust remover, cleaner and paint base

SOAK CLEANERS For all metals

ELECTROLYTIC CLEANERS For all metals

SOLVENT CLEANERS For removing heavy soils

PROCESSING TANK EQUIPMENT Automatic Temperature Controls

COMPLETE LINE of Heat Treating Salts, Carburizing, Tempering, Neutral, Nitriding, etc.

★

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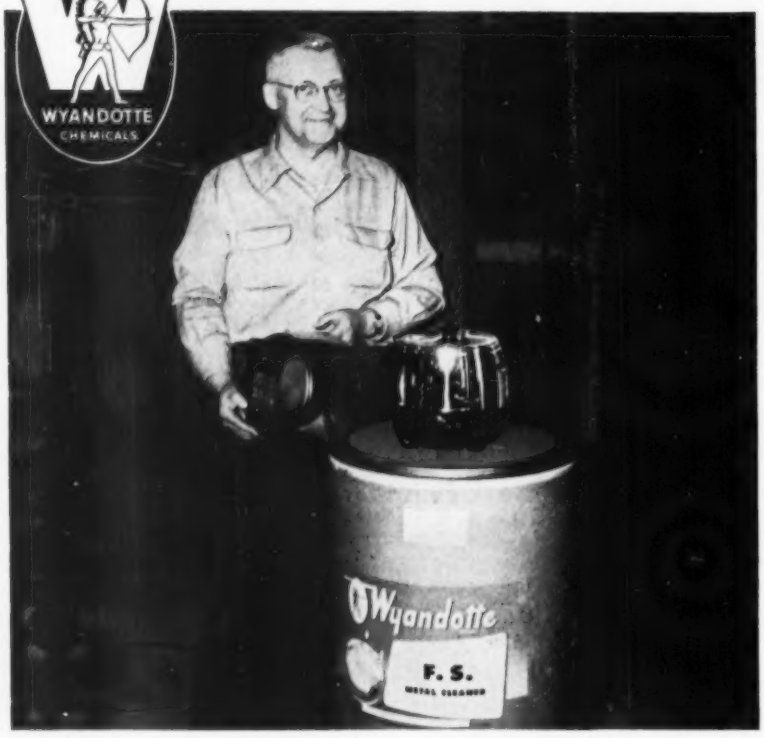
QUALITY PRODUCTS OF CHEMICAL RESEARCH

Specialists in Metal-Cleaning Products



Supt. Hice Ramsey shows the quality plating he gets after cleaning with Wyandotte F. S.

Dominion Electric reduces plating rejects with Wyandotte B. N. and F. S.* cleaners!

"Exhaustive tests with Wyandotte metal cleaner compounds in our automatic plating operations have proved most gratifying. We are particularly pleased with the consistently good results from Wyandotte electrocleaners, B.N. and F.S.," reports Hice Ramsey, Superintendent, Plating and Polishing Dept., Dominion Electric Corporation, well-known appliance manufacturer, Mansfield, Ohio.

"We are experiencing *fewer rejected parts* and our over-all *economy* is meeting the demands of our engineering department."

B.N.—a versatile direct- or reverse-current electrocleaner — for excellent preparation of ferrous and non-ferrous metals, including buffed nickel, for plating.

F.S. — a heavy-duty, reverse-current electrocleaner for ferrous metals . . . removes lubricating oils, compounds and "smut." F.S. has long solution life, high conductivity; it's tops for economy and efficiency.

Other Wyandotte products used by Dominion Electric are: W.L.G.*, a "soak" cleaner for ferrous metals, and Wyandotte ZORBALL, the all-purpose floor absorbent that won't cake, mud or dust.

If you have a metal cleaning or plating problem, give your Wyandotte representative or jobber a call. He'll help you produce better plated products at lower costs. *Wyandotte Chemicals Corp., Wyandotte, Mich. Also Los Angeles 12, California.*

CLEANING THE WORLD

*REG. U.S. PAT. OFF.

Wyandotte CHEMICALS

Helpful service representatives in 138 cities in the United States and Canada

Largest manufacturers of specialized cleaning products for business and industry

Equipment and Supplies

plate on one end for conventional grinding and a 5-inch D-1 cam lock nose on the other end for mounting chucks or fixtures. To change from a dog-drive setup to a chucking operation, it is only necessary to rotate the headstock 180° and set up the work. When work is being ground on dead centers, the chuck does not rotate because the headstock is a combination live and dead center type.

A work speed range of 40 to 400 rpm in an infinite number of increments is available at the turn of a dial. No direct current source is required as the headstock drive is a-c controlled through rectifiers. For more information on this equipment, use Reader Service Card.

E—637. Stainless Steel Filter—Steadfast Industries, Inc., 4731 W. Madison St., Chicago 44, Ill., announces a new

type of permanent stainless steel filter for purifying plating solutions. Tubular filter elements made of stainless steel are locked on a single support plate. This allows all of the filter elements to be removed as one unit for inspection and cleaning. The permanent filters also can be "back-washed" periodically for cleaning if desired. The stainless steel filter elements do not absorb and therefore can be used on either acid or alkaline solutions without fear of contamination. Full information can be obtained by using Reader Service Card.

E—638. Aluminum and Steel Cleaner Minimizes Foam—Oakite Products, Inc., New York 6, N. Y., have announced the development of composition No. 161, an alkaline type material designed to clean aluminum, steel and other metals in spray washing machines without objectionable foaming.

No. 161, the manufacturer states, is a white, free flowing, powdered material that is completely soluble in water, free rinsing, and inhibited to provide safety to aluminum. Due to its built-in anti-

SAVINGS

pile up...when you silver plate with

HANDY & HARMAN 999 "PLUS" FINE SILVER ANODES

Savings pile up when you use these top quality silver anodes because they're free from every trace of impurities that can cause plating troubles; also because they never vary in their high fineness and superior plating properties. This assures a steady flow of trouble-free, cost-saving, highest quality silver plating.
Try Handy & Harman 999 "Plus" Fine Silver Anodes and see the difference.

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Providence, R.I. · Toronto, Can.

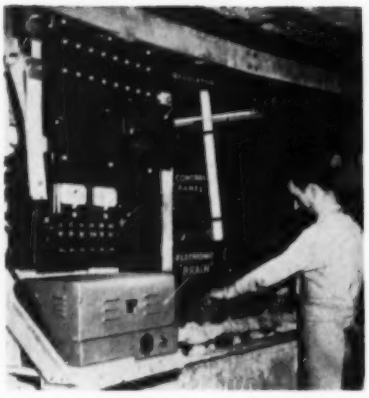
FOR FURTHER INFORMATION, USE READER SERVICE CARD; INDICATE A 655.

Equipment and Supplies

foam properties, this material is also effective in the new, high pressure-spray washing machines for cleaning steel and other metals. In extensive field tests carried out in spray washing machines operating at both low and high pressures, this material has consistently demonstrated the ability to eliminate the troublesome foaming problems formerly encountered. For more data on this material, use Reader Service Card.

E—639. Automatic Plating Controller—Unit Process Assemblies, Inc., 75 E. Fourth St., New York, has announced a new development in the automatic control of current and voltage for all types of plating solutions. This new electronic device is known as the automatic plating controller (APC).

Use of the APC eliminates the setting of switches when loading or unloading tanks, since the current and voltage automatically adjust to changing loads. The tank operator needs only to be occupied with loading and unloading operations. The APC is applicable to all plating solutions, and all tanks can be controlled by one supervisor from any remote location.



The APC is easily connected in the d-c bus bar line between the tank and the power source (either rectifier or generator) in place of the rheostat ordinarily used. The voltage control knob on the electronic "brain" is preset to the desired tank voltage, and the controller automatically maintains this voltage, reducing the voltage for small loads to prevent "burning." For more information on this equipment, use Reader Service Card.

E—640. Rubberchem Pump—Eco Engineering Company, 12 New York Ave., Newark, N. J., offers a new displacement pump, embodying the time-tried design and features of the Eco stainless steel and Teflon All-Chem pump, with precision molded synthetic rubber pump casings.

The new pump is suitable for corrosive fluids and capacities of up to 10 gpm and 100 psi for sustained service.

Ruggedly built, age-cured and fully stress relieved, the new Rubberchem pump definitely offers the lowest cost pumping unit in its range of capacities. Unexcelled suction lift, safety because of its self-priming design, and linear flow are standard features of the unit. For more information on the product, use Reader Service Card.

E—641. Electropolishing Concentrate—Electro-Glo Co., 1430 S. Talman Ave., Chicago, has introduced a new electropolishing concentrate known as "Electro-Glo 200" which is used at room temperatures. The product is designed to level the surface, remove high spots and burrs, and produce finishes from satin to mirror-bright on copper and copper alloys. Use of the new product will permit the polishing of intricate shapes (impossible to process practically by other known methods), remove burrs from threaded, pierced and stamped parts, increase corrosion resistance, and produce superior adhesion for plating. It provides a method of machining metal parts electrochemically, to tolerances of 0.0001 inch.

Buying Inferior Products To Save Money
Is Like Stopping The Clock To Save Time

TRADE MARK
MATCHLESS
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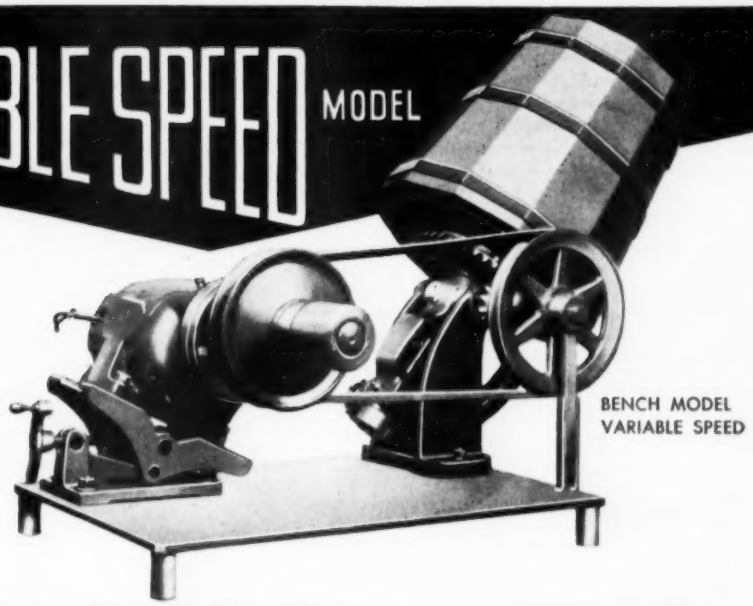
Quality Since 1877

BUFFING AND POLISHING COMPOUNDS **PERMACORE BUFFS**
BUFFS AND POLISHING WHEELS

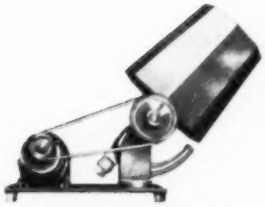
THE MATCHLESS METAL POLISH CO.
840 W. 49th Place, Chicago 9, Ill. 726 Bloomfield Ave., Glen Ridge, N. J.

INTRODUCING—our NEW

VARIABLE SPEED MODEL



BENCH MODEL
VARIABLE SPEED



Bench-Type Single Speed

No. 5—Single Speed

No. 5A—Single Speed

No. 6—Single Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive—*while running.*

Work can be watched — samples removed for inspection — *while running.*

Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

No. 5—Variable Speed

No. 5A—Variable Speed

No. 6—Variable Speed

If You're a Tumbler, Send for This NEW CATALOG

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

133 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

Equipment and Supplies

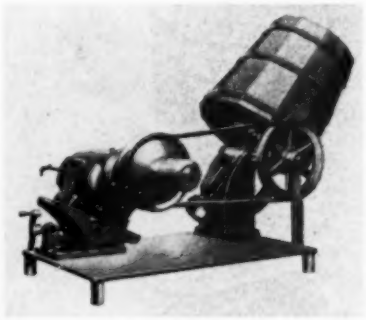
Advantages of the new concentrate are that it operates at temperatures from 75 to 125° F, uses standard plating tanks and equipment, does not etch, is excellent in its throwing power, is nontoxic, nonflammable and nonexplosive, and is completely stable with long life.

In from 2 to 8 minutes at an operating rate of 5–12 volts and 0.5–1.5 amperes per square inch, an "Electro-Glo 200" and phosphoric acid solution will produce finishes from satin to mirror-bright on all copper or copper alloy surfaces, except leaded brass and silicon bronze, which will not take mirror finishes. For more information on this product, use Reader Service Card.

E—642. Kocour Selenium Rectifier—Kocour Selenium Rectifier model 25A is a self-contained power supply; a-c input

110 volts 60 cycles; d-c output 6 volts, 25 amperes continuous duty ratings. Full wave bridge type selenium rectifier stack . . . Powerstat single knob continuously variable control over entire range. Thermoswitch protection against overheating. No installation . . . no maintenance, ideal d-c power supply for individual tank, small plating barrel, battery charging, research and control. Write for literature to Kocour Co., 4801 S. St. Louis Ave., Chicago 12, Ill., or use Reader Service Card.

E—643. Variable-Speed Tumbling Barrel—A new bench type, variable-speed tumbling barrel, announced by The Henderson Brothers Co., 132 S. Leonard St., Waterbury, Conn., offers the time-



saving advantages of nearly nonstop operation. While the barrel is running, it can be filled with parts or abrasive, or emptied, by tilting to pouring position—work can be watched and samples removed for inspection—the angle can be changed for best abrasive or polishing action—and the running speed can be adjusted over an average range of 10 to 40 rpm.

These barrels are made in various sizes, shapes and materials, and they are replaced easily. The new bench model and three pedestal models with variable speed match a line of four tilting single-speed machines. For more data on the units, use Reader Service Card.

E—644. Process for Phosphatizing Prior to Silicone Coating—A new process just announced by The Diversey Corp., 1820 Roscoe St., Chicago 13, Ill., makes it possible to phosphatize steel and still apply silicone finishes. The new process built around Diversey Divobond is claimed to clean, rustproof and give greater finish adherence to the metal all in one spray application. Up to now, steel which was to have a silicone finish has been treated with a solvent cleaner and painted. Since silicone paints do not adhere to usual phosphatized surfaces, the advantages of rustproofing have not been possible for products like heaters, electric motors, furnaces, radiators and other products where heat is a factor.

Readers interested in testing Divobond may secure samples of the product or may send in test panels for coating. Re-

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For pickling and metal plating . . . wherever corrosive acids and other chemicals are used, manufacturers specify Manhattan Rubber Linings. That's because Manhattan's more than 60 years' engineering experience has resulted in the most dependable and most economical rubber linings made in the industry today. Manhattan Rubber Linings are made of calendered sheets of non-porous natural or synthetic rubber in required thickness and compounded to eliminate contamination, corrosion, and stray currents . . . to give longer, better service under severest conditions of use. Manhattan's exclusive rubber-to-metal bond eliminates cracking by contraction and expansion due to temperature changes. To detect any imperfections, all Manhattan Rubber Lined equipment is tested dielectrically under 15,000 volts before shipment to doubly assure satisfactory results.

RM-442

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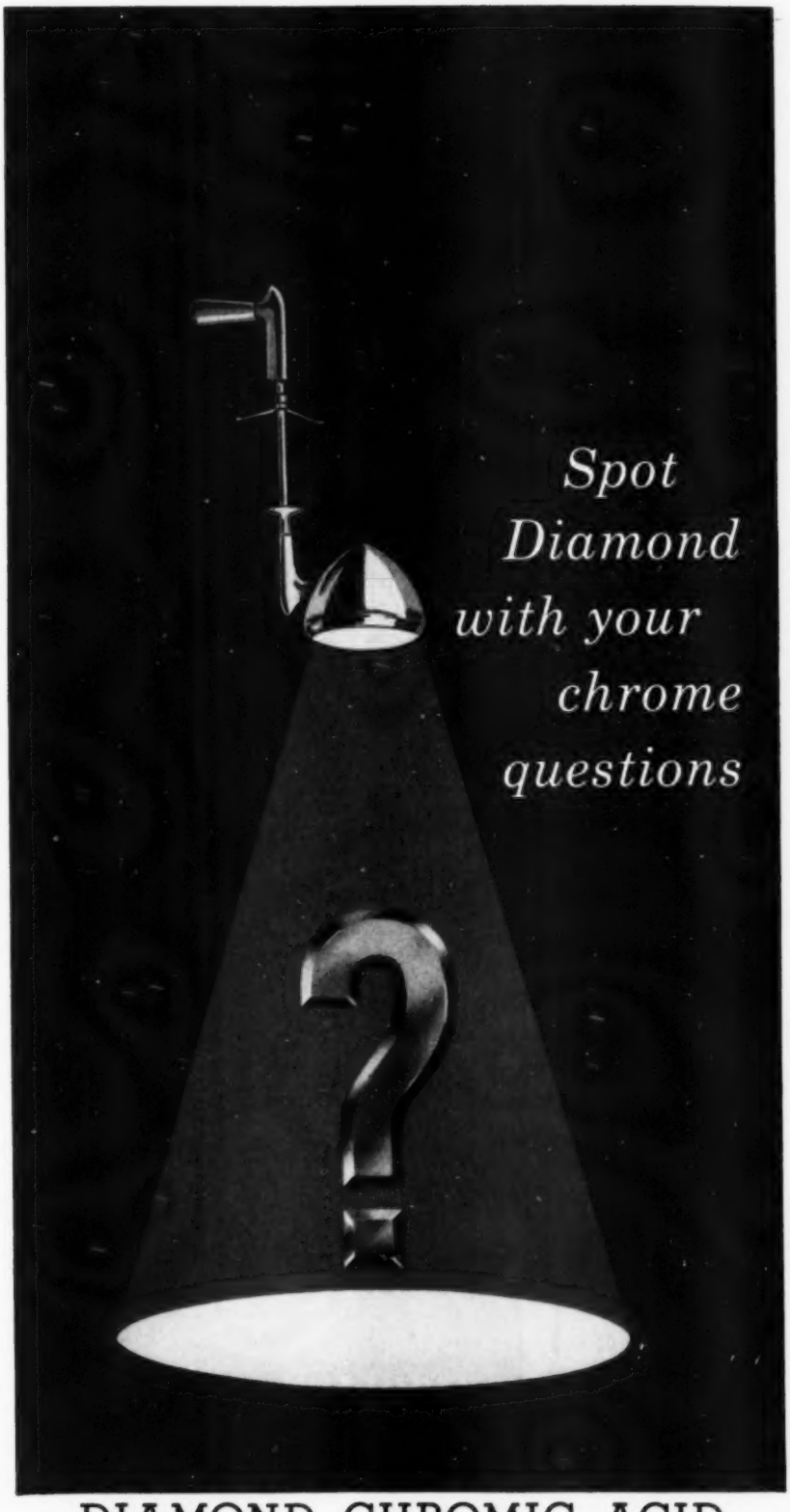

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Let DIAMOND step into the spotlight when you have questions about chrome plating. DIAMOND's Chromium Chemicals Division is ready with Technical Specialists who do nothing else. What's more, this service doesn't cost you one cent extra.

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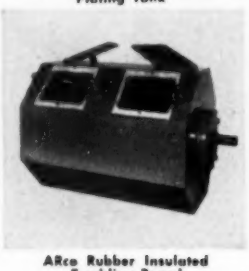
Rubber Covered Pipe and Fittings

Rubber Lined Diaphragm Plating Tank

ARco Rubber Lined "Handy-Tanks"



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Seamless Rubber Insulated Handling Equipment

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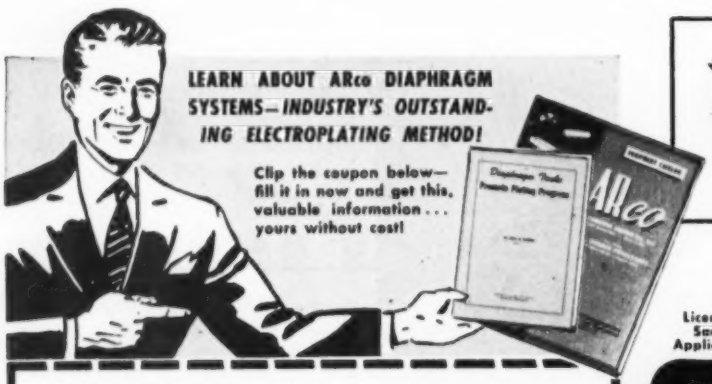
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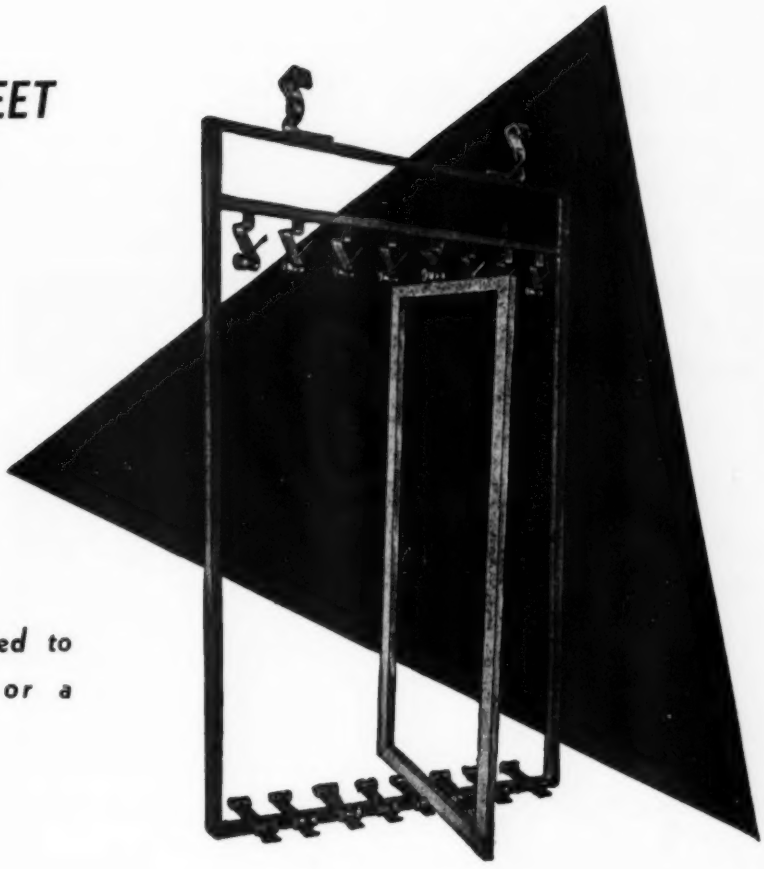

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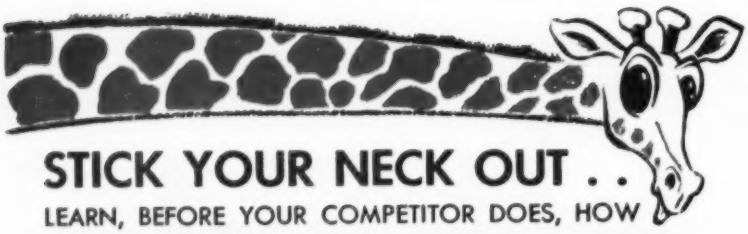

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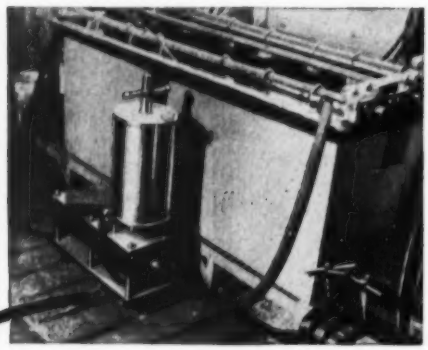
CHECK the advantages of using a "Sealed-Disc" Filter



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Models for any size or type installation in Stainless Steel, Monel Metal, Plain Iron, etc.
Small, compact—requires exceptionally small floor space coupled with remarkable filtering speed and volume.
Completely enclosed and air tight—eliminates loss of liquid from dripping.
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Simplicity of design assures savings in operating time and labor with positive trouble-free performance.

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Regardless of the size or type of your plating installation, there's a *"Sealed-Disc"* Filter *"to fit your job"*—you can depend on these proved performance features—you can be sure that all dirt, sludge, and even the invisible impurities are removed from your plating solutions.

"Sealed-Disc" Filters were designed especially to meet plating room requirements. They are smaller, more compact and portable than ordinary Filters, yet they are capable of handling equal volumes of solutions. Ask your regular plating supplier to tell you about the *"Sealed-Disc"* Filter that has helped so many platers get better finished plated work with savings in time and labor—or write for details.

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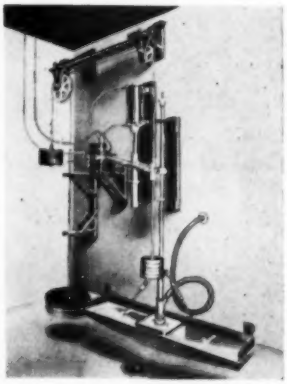
Equipment and Supplies

quests for samples or test panels should be sent to Divobond Department, Diversey Corp. For other information on the process use Reader Service Card.

E—645. Oil Skimmer—A new device for reclaiming oil that may have been used in one or more manufacturing processes after it has served its purpose has been announced by the Simplex Valve and



Meter Co., 68th and Upland Sts., Philadelphia 42, Pa. Known as the "oil skimmer," the unit operates from the liquid level in a chamber through which the waste is flowing. The manufacturer claims that large quantities of valuable oil, that otherwise would be lost, can be saved through utilization of the device.

The device will automatically and constantly skim oil from liquid surfaces regardless of the liquid levels in the collection tanks or chambers. It has numerous applications in different industries and can be applied wherever the reclamation of oil exists. It is of particular significance since it plays a part in the river antipollution programs being conducted by many state authorities. The unit provides a means, hitherto unknown, of prevention of oily waste discharge into rivers and streams. For more information, use Reader Service Card.

E—646. Add New Wiring Insulation To Electronic Instruments—A new moisture proof high-voltage insulation is being used for internal wiring of the electronic instruments manufactured by the Minneapolis-Honeywell Regulator Co., 2954 Fourth Ave., S., Minneapolis 8, Minn.

The new insulation, a thermoplastic material, is impervious to moisture and thus is recommended for use where high humidity conditions prevail.

For identification, the insulation comes in 10 base colors. Where tracers are required the insulation is white with two

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"Controlled Compounds" in extruded bar and liquid to meet all requirements and conditions of any job.

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- SPRAYABLE VISCOSITY

J. C. Miller Engineers are fully qualified through technical training and years of practical experience to demonstrate and recommend materials and methods for use in your plant — materials and methods that pay you big dividends in higher production and increased savings.

Our Buffing Engineers are equipped with portable Liquimatic demonstration kits which enable them to easily show you the savings that Liquimatic can effect in your plant — on your production line. This demonstration equipment is rapidly set up, requires no assistance from your help and the test can be made on hand lathes or automatic equipment using just a compressed air connection. The demonstration in no way impedes your normal production flow.

Here is a demonstration you should see regardless of past experience or whether or not you are using a liquid compound at present! We know that we can show you that we have achieved the maximum in performance through combining the very latest in automatic application equipment with the very best in compounds — Liquimatic. This is the Liquimatic team — an unbeatable combination.

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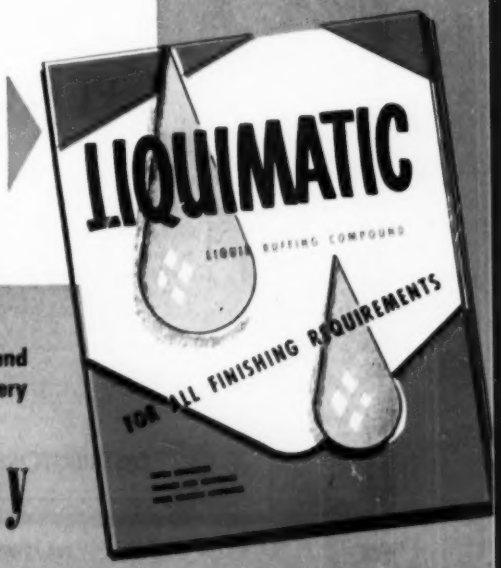

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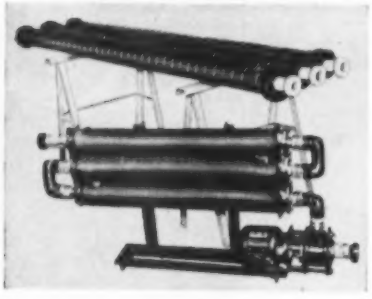
identically colored helical stripes to identify the base color and a third stripe to show the tracer color. Input circuit wiring will be solid white covered by color-coded rayon braid. For more information on these units, use Reader Service Card.

E—647. Tantalum Heat Exchangers—Tantalum jacketed heat exchangers of new design for chromium plating use have



been announced by Carl Buck & Associates, Essex Fells, N. J. The design is unusual in that plain end 1¾ inches ID x 9 feet long x 0.020 inch wall tantalum tubes are used. These units are suitable for many other acid heat exchanger applications.

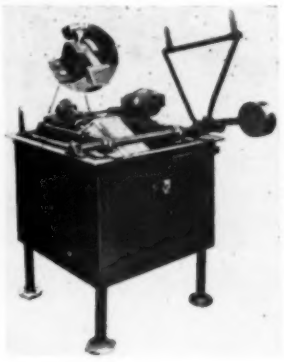
Simplified design makes possible a low price per square foot for exchangers of such materials as tantalum, Karbate, stainless, nickel and black iron. For more data, use Reader Service Card.

E—648. Metal Identification Kit—A kit called Chemi-Spot, utilizes well known chemical spot-testing techniques. With this kit over 80 of the commonly used metals and alloys may be identified, using simple procedures according to the manufacturer, Wescott Laboratories.

This unit weighs 12 pounds, is contained in a portable brown leatherette carrying case and comes equipped with all the necessary chemicals except the concentrated acids which must be supplied by the purchaser. Included also is a booklet, "Rapid Identification (Spot Testing) of Some Metals and Alloys," published by the International Nickel Co., Inc. For more information, use Reader Service Card.

E—649. New-Type Contact for Daniels Barrels—A new knife switch type of contact and drive gear positioner which maintains positive negative contact at all times has been developed for use with the standard OLS plating barrels manufactured by the Daniels Plating Barrel & Supply Co., 129 Oliver St., Newark 5, N. J.

Illustrated in the inset in the photo-



graph, this new device offers the additional advantage of self-cleaning thus increasing the current capacity of the entire unit and substantially raising the overall efficiency of the barrel.

This new knife switch also has a set screw mounted through it in order to maintain perfect gear mesh and alignment at all times. This feature has proven valuable in reducing the already low maintenance costs and down time on Daniels barrels by elimination of gear wear. The knife switch contacts described may be installed on any Daniels'

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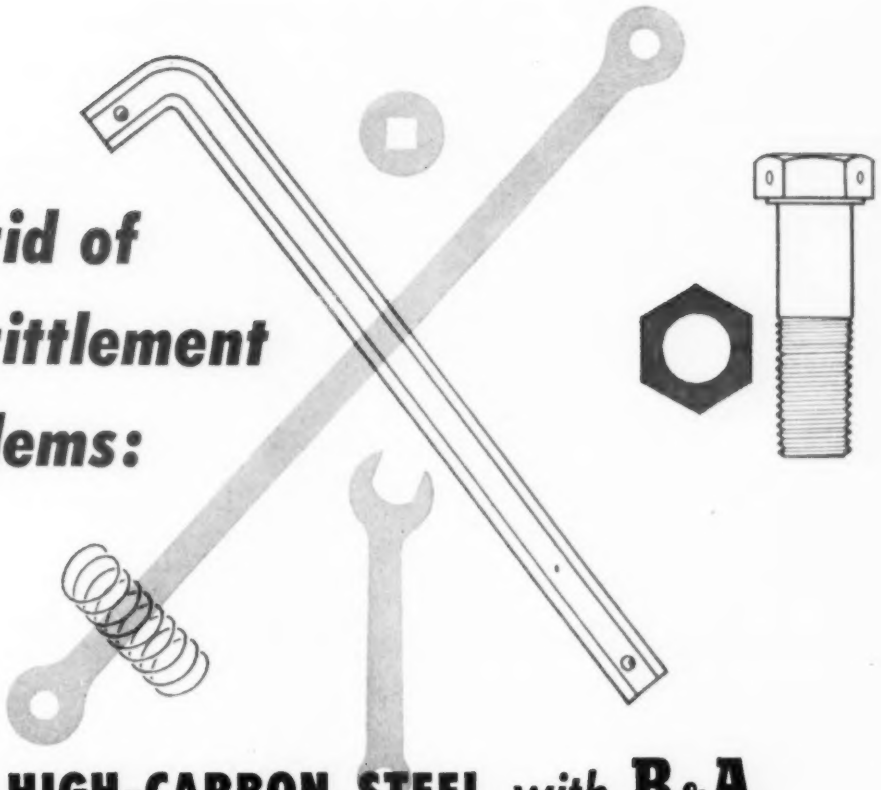

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The high current efficiency of the B&A cadmium fluoborate bath makes its use especially suitable for plating high-carbon steels. Cadmium plating from the B&A fluoborate solution eliminates the objectionable hydrogen embrittlement produced in low-efficiency plating baths. The customary heat treatment to relieve hydrogen embrittlement may be eliminated.

Good adhesion and an attractive, light finish are also easy to obtain when B&A cadmium fluoborate is used. Operation at room temperature with no gassing at anode and cathode eliminates toxic fumes usually found around cyanide-containing baths.

Other practical operating advantages of B&A concentrated cadmium fluoborate solution are:

- **Easier bath preparation**
- **Stability of bath composition**
- **Ease of control**
- **Practically 100% anode and cathode efficiencies**
- **High conductivity**
- **Fine-grained deposits of good color**
- **Faster, high-speed operation**

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The new engineering developments which have taken place in the Roto-Finish laboratories open the door wide to entirely new applications and entirely new principles in mechanical surface finishing. Therefore, whatever your finishing problem, we urge you to ship us two finished and several unfinished samples of parts you may wish to have us process in our laboratories. Remember, Roto-Finish guarantees the same result in your shop, as on the samples processed in their laboratories.

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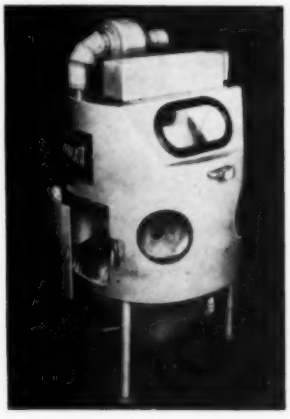
plating barrel manufactured since 1946. Inquiries on the above improvement and any barrel plating applications are invited by the manufacturer. Use Reader Service Card.

E—650. Portable Blast Cleaning Machine—R. W. Renton and Co., 877 Addison Rd., Cleveland 3, Ohio, makers of Jet Blast cleaning equipment, announces a new low cost bench model unit which



now puts this up-to-date method of metal cleaning well within the reach of the smallest metal working shop. Eliminating costly hand operations from metal cleaning routine, it saves up to 60 per cent in labor costs in cleaning, burring, and etching metals.

The new bench model, while smaller in size than the previous Renton units, operates with the same high efficiency in speedily and accurately removing rust, scale and all types of foreign deposits from dies, molds, tools and other precision articles without dimensional alterations.

The compact bench model is 24 inches in diameter, 43 inches high and weighs only 155 pounds. Because of its compactness and relatively light weight, it is portable and can be moved easily from one job location to another. For more information, use Reader Service Card.

E—651. Dust Collector—The newly developed AMERjet dust collector, manufactured by American Air Filter Co., Inc., Louisville 8, Ky., is a reverse jet fabric collector designed for those applications where extremely fine particles are involved or where the material must be collected in a dry state for reclaiming.

The cleaning media is reconditioned automatically by a jet of high pressure air forced through the cloth in opposite direction to the flow of the air being cleaned. Because the cleaning cycle is continuous, the AMERjet maintains a constant pres-

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As specialists in the precious metals, we have both the facilities and the trained personnel best able to produce salts and solutions for the plater. As a result, ours enjoy a well earned reputation for high quality and consistent performance.

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PALLADIUM PLATING SOLUTION — Produces a flash plate in from 15 to 60 seconds. Heavy deposits can be made from the same solution. Gives excellent results in plating connectors, wave-guides and other electronic equipment.

CONCENTRATED GOLD PLATING SOLUTION No. 319 — Containing one ounce of fine gold.

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GOLD COLORING SOLUTIONS — For light, yellow, red and green gold.

HIGH GOLD CYANIDES — Our sodium-gold cyanide contains 71.5 per cent of fine gold and our potassium-gold cyanide 67 per cent as compared with commercial salts of 46 and 41 per cent. Gold content for gold content, our high gold cyanides cost you no more. We make the commercial 46 and 41 per cent salts too.

SILVER SALTS—SILVER ANODES — We make silver cyanide and silver nitrate as well as silver anodes.

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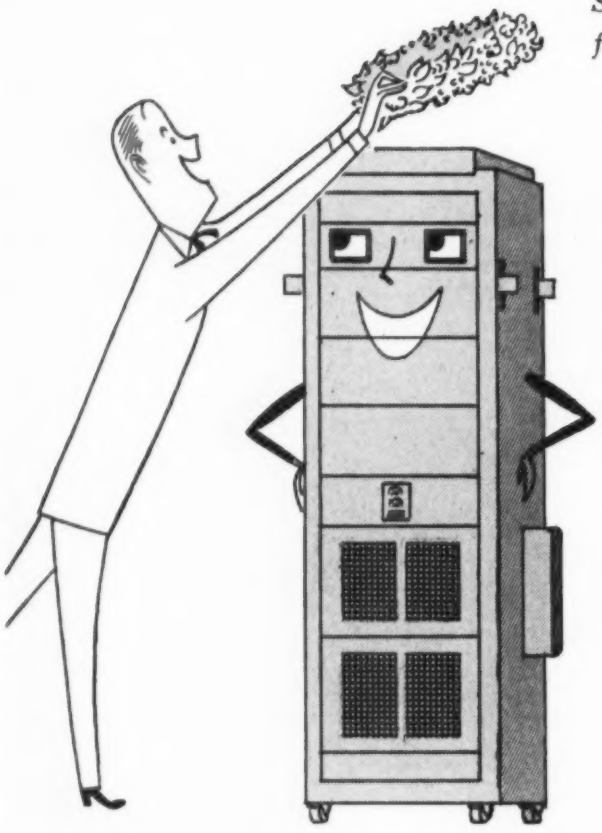

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- High temperature automatic shutdown
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- Downdraft cooling
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- Dual input
- Dual, triple and quadruple output
- Pushbutton remote control
- Automatic voltage stabilization
- Automatic current stabilization
- Automatic ampere-hour control
- Automatic time control
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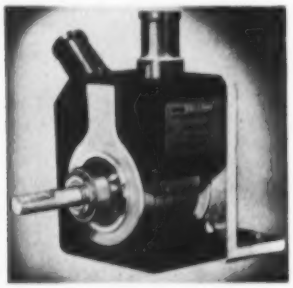

pump block has been announced by Vanton Pump & Equipment Corp., Empire State Building, New York City.

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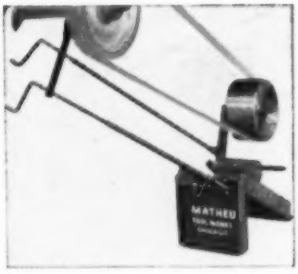
E—653. Constant Voltage Selenium Rectifier—This new rectifier, now offered by Richardson-Allen Corp., 39-15 Main St., Flushing, N. Y., is rated at 28 volts, 30 amperes and is adjustable from 21.8 to 30.8 volts. An electronically controlled saturable-core reactor is employed to obtain fast recovery and close regulation. Recovery time is 0.2 second. The output is filtered for a maximum of 0.5 per cent ripple. The unit is designed to be operated from a line source of 115 volts, single phase, 50–60 cycles. For more information on this product, use Reader Service Card.

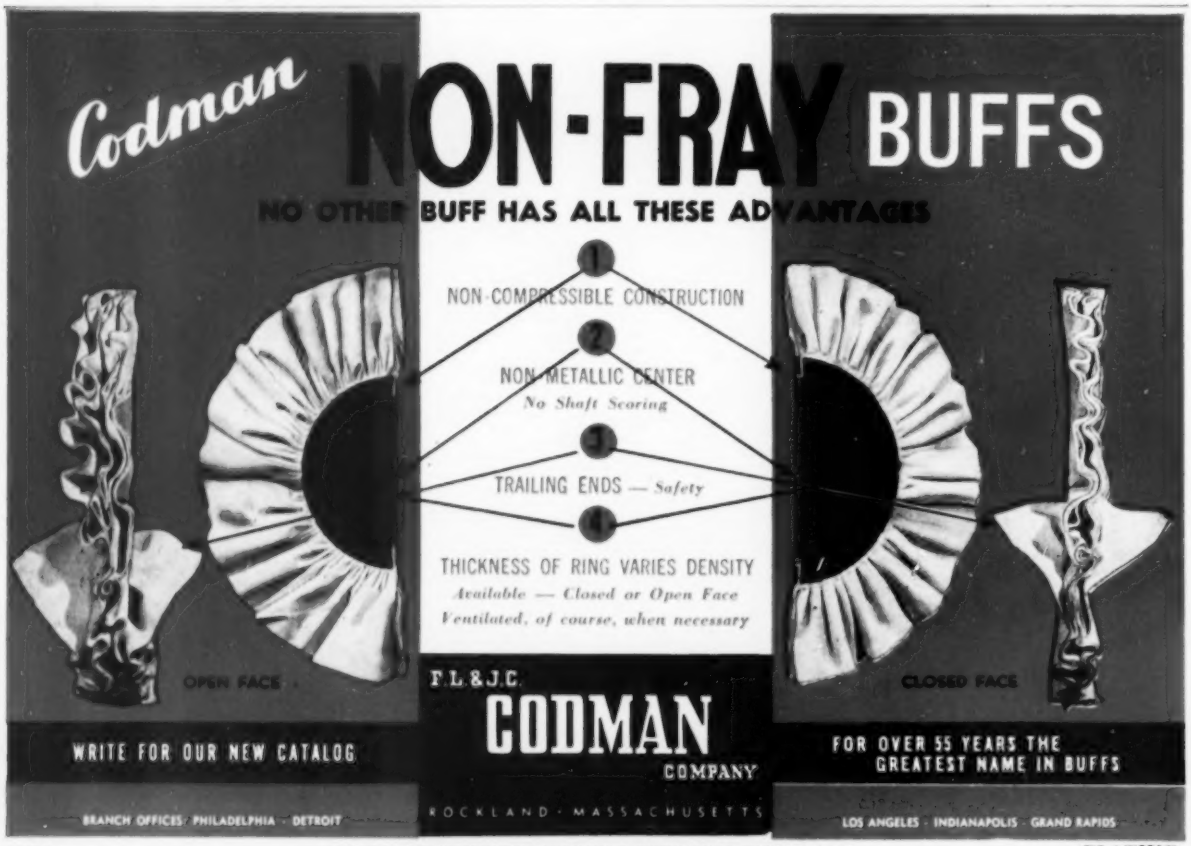
E—654. Improved Backstand Idler—Faster abrasive belt finishing with less down time is featured in an improved backstand idler announced by Matheu Tool Works, 2426 N. Claybourn Ave., Chicago 14, Ill.

Called the "belt master," the improved idler provides belt tension and tracking adjustment from the operator's position. The tracking adjustment moves the idler pulley from side to side instead of turning the face, thereby avoiding destruction of bond.



One-motion tension release permits a belt change to be made in a few seconds. For more information on this unit, use Reader Service Card.

E—655. PVC Needle, Plug and Globe Valves—Atlas Mineral Products Co., Mertztown, Pa., announces the availability of a complete line of nonplasticized Type I PVC needle, plug and globe valves in sizes ranging from 1/8 to 2 inches. These units supplement Ampcoflex Type



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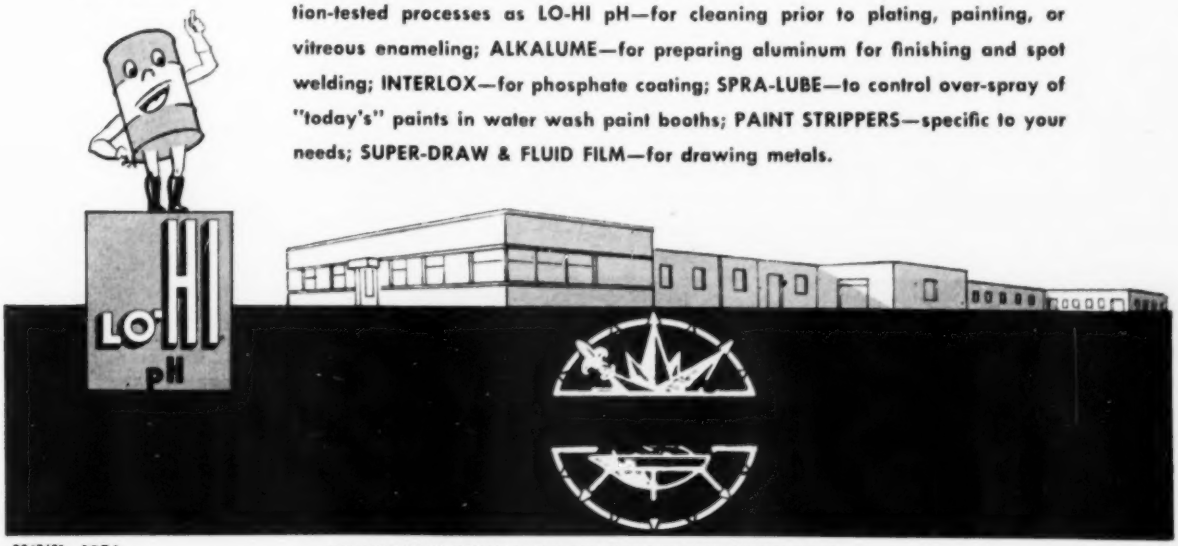

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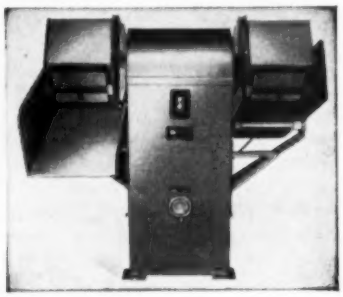
E—656. New Idea In Tumbling Barrels—Rampe Manufacturing Co., 3320 St. Clair Ave., Cleveland 14, Ohio, have designed a twin barrel finisher built around a new idea in handling convenience. It involves the use of movable chutes under the barrels which can be tilted to the rear to drain off liquids, and then can be tilted forward to deliver the load to proper containers.



Another big advantage in this design is the fact that chutes tilted to the rear, while the machine is in operation, form an effective guard around the moving barrels. This is a big improvement over the usual cabinets and covers.

The barrels have a load capacity of 1.1 cu ft each. Barrels may be furnished unlined, or lined with vinyl plastic. For complete information, use Reader Service Card.

E—657. Blackening Costs Cut—A one-instrument control system which automatically maintains the correct temperature and concentration of blackening bath solutions has been engineered by The Foxboro Co., Foxboro, Mass.

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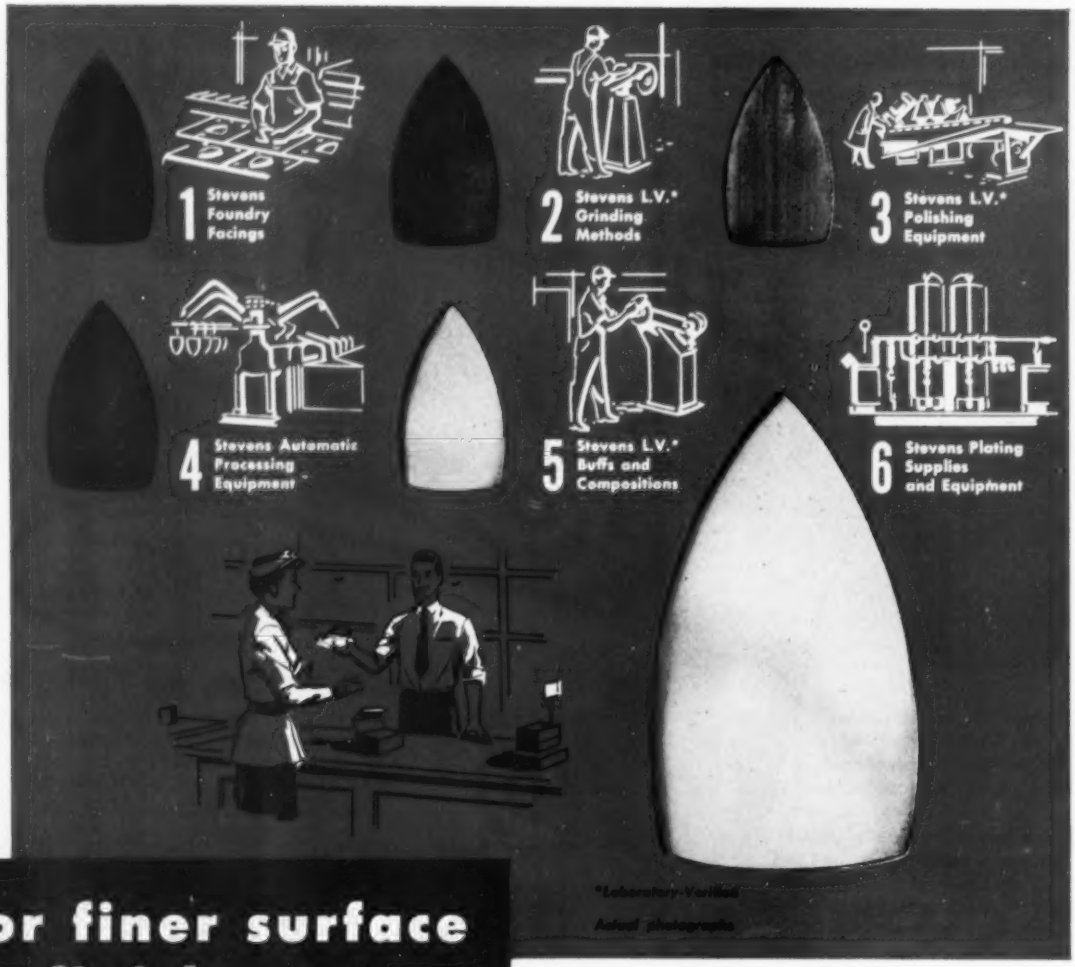
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JUNE, 1954 VOL. 41, NO. 6

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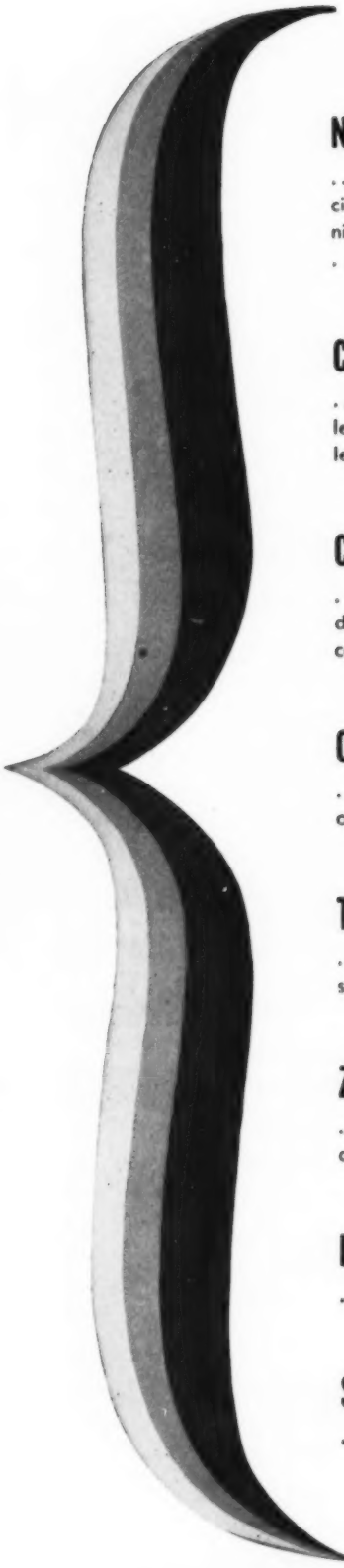

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Editorial

The Fight Against Obsolescence

THE CONTINUAL FIGHT that industry leaders have made against obsolescence is one of the prime reasons for the high standard of living that has been established and maintained in this country. That battle is one which calls for unceasing attention to detail.

Today, industry is pressured by the squeeze between rises in operating costs and competitive selling prices. This squeeze is aggravated further by the inexorable demands of Father Time. Equipment wears out, or its efficiency becomes impaired or a newly developed production technique outstrips a still efficient method. The platers' lot is a more complicated one. Today, they are badgered by extra problems—such as a shortage of a vital material for which no satisfactory alternate has been developed.

From this picture of the past and present, a quick transition is made into the future. According to an authoritative estimate, by 1975, this country's population will soar close to 200 million. Eighty millions will produce goods whose gross value will reach about 570 billions of dollars.

Where does the metal finisher fit in this picture? It must be admitted that those who run their plants in an efficient manner will enjoy the benefits of the prosperity that goes with a growing economy. However, to be assured of an efficient business operation, the plant owners, the engineering, development and productive employees must keep up their fight against antiquated machines and methods that has been waged in the past.

To be assured of a spot in the future, now is the time to plan for an easier, better and smoother operation. Now is the time to install a new, more efficient process and new cost-cutting equipment. The time to junk the ineffective, space-stealing, nonproducing segments of a business is now, before the competition does so. It is only through such foresight and vigilance that one can prosper. Careful examination of past business failures shows that many firms that have fallen by the wayside were those that had let up in their fight against obsolescence.

Al Korbelak

ANALYTICAL DETERMINATION OF TRACE CONSTITUENTS IN METAL FINISHING EFFLUENTS

IV. THE COLORIMETRIC DETERMINATION OF IRON IN EFFLUENTS

BY EARL J. SERFASS* RALPH F. MURACA,*
AND DONALD G. GARDNER,†

The following paper, the fourth of a series, is a result of the work sponsored at Lehigh University by the AES and the Ohio River Valley Water Sanitation Commission. While the original procedure was worked out under AES sponsorship, the modification was developed under ORSANCO sponsorship, the commission having placed the project at Lehigh so as to be able to utilize the background developed by AES Project No. 2. It should be noted that the methods described in this series were tested, modified if necessary, and retested by at least six and sometimes as many as twelve industrial laboratories. As a result of this, the approved form, as published here, was developed.

ABSTRACT

A colorimetric procedure for the determination of 5 to 50 ppm of iron in effluents is presented. The method was found to yield satisfactory results in the presence of as much as 5000 ppm of each of 23 ions in simultaneous admixture as well as in the presence of organic materials.

The procedure involves a preliminary treatment with hot, concentrated acids to remove organic materials and an extraction of the iron content of the sample by isopropyl ether from a 6 N hydrochloric acid solution. After reduction of the iron, the addition of ortho-phenanthroline causes the formation of a strongly colored orange-red complex, the intensity of which is measured with a colorimeter.

The procedure can be shortened materially in certain instances, and a table summarizes the changes which can be made when the amounts of the elements other than iron are known or can be estimated.

THE COLORIMETRIC DETERMINATION OF IRON

The two commonly used methods for the colorimetric determination of iron depend on the formation of highly colored red complexes with thiocyanate or ortho-phenanthroline. Although the thiocyanate method has been accepted widely because of its sensitivity and simplicity, the instability of the red color limits its use. Ortho-phenanthroline was selected as the reagent in this method since the orange-red color that is developed with ferrous iron is stable for long periods of time. In addition, it does not require close *p*H control and is very sensitive.

A critical study of the ferrous ortho-phenanthroline color development and interferences was carried out by Fortune and Mellon.[1] Almost all of the interferences noted by these authors are eliminated in the method described here by the extraction of iron with isopropyl ether as suggested by Mellon, Butts, and Gahler.[2]

Description of the Method

Since organic matter may retain iron in a form which can not be extracted by isopropyl ether, a preliminary fuming with nitric and sulfuric acids is necessary. Any insoluble substances which remain after dilution of the digestion mixture are removed by filtration or centrifugation.

After selection of an appropriate aliquot is made, hydrochloric acid is added to make the total acidity about 6 N, and the iron in solution is extracted by isopropyl ether. It has been found that the extraction of iron by isopropyl ether is at a maximum when the

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†Formerly Research Assistant, Lehigh; now with U. S. Rubber Company, Passaic, N. J.

HCl content of the solution is 6-8 N. Swift[4] has reported that bismuth^{+++} is not extracted by isopropyl ether from a 6 N HCl solution, while Mylius and Huttner[4] showed that only 17 per cent of tin^{++++} is extracted by ethyl ether.

The iron then is extracted from the isopropyl ether by water. After reduction of the trivalent iron, orthophenanthroline is added and the intensity of the developed color is measured with a colorimeter or a spectrophotometer.

Although considerable amounts of arsenic, thallium, antimony, and tin may be extracted by the isopropyl ether, no difficulty was encountered when the recommended procedure was tried on concentrations of iron in the range of 5 to 50 ppm in solutions containing 5000 ppm of each of the following ions in simultaneous admixture: Ag^{+}, Hg^{++}, Pb^{++}, Bi^{+++}, Cd^{++}, Cu^{++}, As^{+++}, Sb^{+++}, Sn^{++}, Al^{+++}, Mn^{++}, Ni^{++}, Co^{++}, Zn^{++}, Ca^{++}, Sr^{++}, Ba^{++}, Mg^{++}, Na^{+}, NH_4^{+}, P as PO_4^{---}, Cl^{-}, and organic materials such as tartrates. The valence state of the ions in the sample is of no concern because of the reduction step in the procedure.

Almost the entire amount of the tin content of the sample is removed as stannic acid in the preliminary fuming with nitric acid. The remaining amount, even if extracted by the isopropyl ether, is below the interference limit. Bismuth and antimony are precipitated largely as the basic salts by the dilution subsequent to the preliminary sulfuric acid fuming.

Sensitivity of the Method

The sensitivity of the method is defined as the number of micrograms of iron which can be determined with a relative error of ±50 per cent. For the following recommended procedure, this corresponds to 5 ppm or 125 micrograms of iron in the 25-ml sample taken for analysis.

Limit of Detection of the Method

The limit of detection of the method is defined as the number of micrograms of iron that must be present in the 25-ml portion of sample taken for analysis so that an extinction of 0.005 for a 1-cm cell thickness at 508 millimicrons will be obtained in step 16. This corresponds to about 15 micrograms of iron (0.5 ppm) for the method described.

The limit of detection can be increased by taking a larger sample, provided that the concentrations of each of the other metal ions do not exceed greatly 5000 ppm.

Discussion of Blank

A blank is used to compensate for the amount of iron in the reagents used in the procedure. Generally, the high quality laboratory reagents contain so little iron that the blank will show little color. However, since iron is such a common element, reagents are likely to pick up considerable quantities. Therefore, it is recommended strongly that a blank be run along with every sample.

Recommended Procedure

This procedure is designed to be used for the determination of 5 to 50 ppm of iron in a 25-ml sample of effluent.

Reagents Required

(1) Nitric acid—Concentrated, 16 N; reagent grade.
(2) Sulfuric acid—36 N; reagent grade.
(3) Isopropyl ether—Reagent grade.
(4) Hydrochloric acid—Concentrated reagent grade.
(5) Hydroxylamine hydrochloride solution—10 per cent w/v.
(6) Ortho-phenanthroline solution—0.20 per cent w/v. Dissolve 0.20 g of the monohydrate in 100 ml of lukewarm water.
(7) Sodium acetate solution—20 per cent w/v.
(8) Standard iron solution—Dissolve 0.125 g of electrolytic iron in 50 ml of 1:3 nitric acid. Boil to expel oxides and dilute to 1 liter with water.

1 ml = 125 micrograms of iron

For establishing a calibration curve, 1 ml of this solution taken as a sample corresponds to 5 ppm of iron for 25-ml sample of effluent taken for analysis in step 1 of the procedure.

Procedure

(1) Pipette a 25-ml sample of the effluent into a 125-ml Erlenmeyer flask.
In running a blank, use 25 ml of water.
In establishing a calibration curve, use 25 ml of water and add 1 ml of the standard iron solution for each 5 ppm of iron.
(2) Add 25 ml of concentrated nitric acid and 15 ml of concentrated sulfuric acid.
Heat until fumes of sulfur trioxide are given off. Continue fuming for 10 minutes. If charring develops, add 10 ml of concentrated nitric acid and bring to fumes of sulfur trioxide again. Repeat until the carbon is destroyed. Do not allow the solution to go to dryness. Add 10 ml of concentrated sulfuric acid if necessary.
(3) Cool the solution to room temperature and cautiously add 50 ml of distilled water.
(4) Immediately filter the solution through a medium porosity sintered glass funnel saving the filtrate. If possible, use a centrifuge.
Wash the filter a number of times with small amounts of distilled water. Combine the washings and the filtrate.
(5) Transfer the filtrate and washings to a 100-ml volumetric flask and dilute up to the mark with distilled water.
(6) Transfer 25 ml of the solution into a separatory funnel.
(7) Add 25 ml of concentrated HCl. Shake to mix the contents.
(8) Extract the iron from the other metals by shaking about 1 minute with 25 ml of isopropyl ether. Save both layers.

TABLE I. SUMMARY OF CHANGES IN RECOMMENDED PROCEDURE WHEN SAMPLE COMPOSITION IS KNOWN

Composition of Effluent	Changes in the Recommended Procedure
Organic matter absent	Omit steps 1 to 5 inclusive. Use a 25-ml sample of effluent and dilute to 100 ml in a volumetric flask. Start with step 6 of the recommended procedure.
All elements except iron below 15 ppm each; bismuth below 0.5 ppm; organic matter absent	Omit steps 1 to 13 inclusive. Dilute a 25-ml sample of the effluent to 100 ml with water. Transfer a 25-ml aliquot of this solution to a 150-ml beaker and start with step 12.
Copper, antimony and tin less than 150 ppm; bismuth less than 0.5 ppm; organic matter absent	Omit steps 1 to 5 inclusive. Take a 25-ml sample and dilute to 100 ml in a volumetric flask. Start with step 7.
Copper, bismuth, antimony, and tin greater than 150 ppm, but less than 5000 ppm	Follow the recommended procedure in its entirety.

TABLE II. SHORTENED PROCEDURE FOR IRON IN THE RANGE 0.01 TO 5 PPM

Composition of the Effluent	Shortened Procedure
Iron 0.01 to 0.1 ppm	Use a 1000-ml sample in step 1. Omit steps 5 and 6. Dilute the filtrate and washings of step 4 (less than 50 ml) with an equal volume of concentrated HCl. Start with step 8. In step 15, use a 50-ml volumetric flask.
Iron 0.1 ppm to 1 ppm	Use a 300-ml sample in step 1. Follow the above procedure.
Iron 1 ppm to 5 ppm	Use a 25-ml sample in step 1. Follow the above procedure.

(9) Extract the aqueous layer two more times with 25-ml portions of isopropyl ether; combine all the ether extracts. Reject the water layer.

(10) Wash the combined isopropyl ether extracts with 25 ml of water. Save both layers.

(11) Again extract the ether layer with 25 ml of water. Reject the ether and combine the aqueous extracts.

(12) Place the combined extracts in a 150-ml beaker and add 10 ml of hydroxylamine hydrochloride solution.

(13) Add 10 ml of ortho-phenanthroline solution.

(14) Adjust the *p*H of the solution to 3.5 by adding sodium acetate solution. Allow to stand at least 2 minutes.

(15) Transfer the solution to a 100-ml volumetric flask and dilute to the mark with distilled water.

(16) Determine the optical density with a colorimeter using a No. 54 green filter or on a spectrophotometer at 508 millimicrons after first setting the instrument with water.

(17) If necessary, convert the scale readings of the photometer to optical density. Subtract the blank readings from the sample readings. If a calibration curve is being established, plot these corrected readings vs. ppm of iron. If a sample is being run, read the amount of iron present from the calibration curve.

For higher concentrations of iron, the calibration curve shows a significant deviation from a straight line; thus, it will be necessary for each laboratory to establish its own working curve.

Variations of the Recommended Procedure

The recommended procedure has been designed to yield a value for the iron content of effluents which is not influenced by the presence of other elements. If the composition of the effluent is known, the recommended procedure can be altered to suit the particular sample. In general, the procedure will be shortened materially if the concentration of each element, other than iron, is less than 150 ppm. Exceptions to this generalization are bismuth and silver, which should be absent essentially, and mercury^{++} and nickel which should be no greater than 15 ppm. Table I summarizes the changes that can be made in the recommended procedure when the composition of the sample is known.

A Shortened Procedure for Iron in the Range 0.01 to 5 ppm

The procedures in Table II are designed for the analysis of effluent samples where the concentration of each of the heavy metals is below 5 ppm and tin and bismuth are below 0.1 ppm each.

Stop-Go Method for Iron

Although many routine iron analyses are carried out using thiocyanate as the color developer, it is felt that

ortho-phenanthroline presents the advantage of producing a highly stable color. If color comparison is made using Nessler tubes, the standards will be stable for many months.

The stop-go method presented employs ortho-phenanthroline and will be applicable when the concentration of each of the impurity elements is less than 15 ppm with the exception of bismuth which must be less than 0.5 ppm; organic material should be absent or negligible.

The stop-go procedure is outlined for determining iron at 5 ppm. But the procedure can be used for iron concentrations of 5–50 ppm by using suitable comparison standards.

Procedure

Preparation of the color comparison standard for iron at 5 ppm

(1) Pipette 4 ml of the standard iron solution (see recommended procedure) into a 100-ml volumetric flask. Add 1 ml of concentrated nitric acid and dilute to the mark. This solution contains 5 micrograms of iron per milliliter.

(2) Pipette 5 ml of the above solution into a 100-ml Nessler tube; add 5 ml of 10 per cent hydroxylamine hydrochloride solution, 10 ml of 0.2 per cent ortho-phenanthroline solution, and 15 ml of 20 per cent sodium acetate solution.

(3) Dilute to the mark and shake.

Color Development and Comparison of an Effluent Sample

Pipette 5 ml of the effluent into a 100-ml Nessler tube; add 5 ml of 10 per cent hydroxylamine hydrochloride solution, 10 ml of 0.2 per cent phenanthroline solution, and 15 ml of 20 per cent sodium acetate solution. Dilute to the mark, shake, and compare with the color comparison standard from 3 above. If the effluent contains silver, add hydroxylamine hydrochloride and filter into the Nessler tube.

REFERENCES

[1]W. B. Fortune and M. G. Mellon, Ind. Eng. Chem., Anal. Ed. **10**, 60 (1938).

[2]M. G. Mellon, P. G. Butts and A. R. Gahler, Sewage and Industrial Wastes **22**, 1543 (1950).

[3]E. H. Swift, "Introductory Quantitative Analysis," p. 431, Prentice-Hall, Inc., New York, 1950.

[4]F. Mylius and C. Huttner, Ber. **44**, 1315 (1911).

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JOINT STRENGTH PROPERTIES OF TIN-LEAD ALLOY DEPOSITS

VINCENT P. McCONNELL*

Introduction

Mass soldering in an automatic process has many advantages, and it was the possibility of accomplishing this that led to the investigations described below. Considered first is the joint strength of tin-lead deposits on steel, and then their joint strength over copper-plated aluminum.

Test pieces used for this investigation were 4 inches by 1 inch by 1/16 inch of SAE 1010 steel. These pieces were given conventional alkaline cleaning steps followed by a dip in 50 per cent by volume hydrochloric acid with appropriate water rinses.

The plating solution consisted of a tin-lead fluoborate solution with gelatin as an addition agent.[1] Solutions were made up during the investigation to deposit 10, 35, 50 and 60 per cent tin alloys. Anodes were of the composition of the alloy desired in the deposit.

Cathode current density was approximately 20 amps/sq ft in all cases and the deposits were measured with a calibrated thickness gage.†

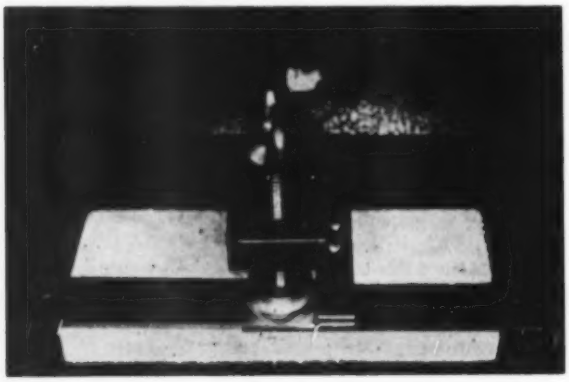


Fig. 1. Clamping device used for forming joints, showing members to be soldered in position. The base of the fixture is made of asbestos while the other parts that are in contact with solder are chromium plated

Solder (Sn-Pb) Deposits On Steel

Procedure

The pieces to be soldered were plated, dipped in flux and then clamped in a special fixture (See Fig. 1) which allowed a one-inch overlap and gave a soldered area of one-square inch. Heat was applied by placing the entire fixture in an oven at the desired temperature for 15 or 20 minutes. For hand-soldered pieces, heat was applied with a soldering iron using the fixture to position the pieces. Pieces soldered by the hot-dip method first were dipped in flux, then in a pot of molten solder until the surface was tinned. The joint was made by applying more flux, clamping the pieces in the fixture and then furnace heating them at 475° F for 15 minutes.

A variety of fluxes were used including (1) rosin-alcohol with and without an activator, (2) organic acid and (3) zinc ammonium chloride.

Since some of the parts in use presumably would be plated with other metals, it was decided to use bare steel plus alloy plate in comparison with cadmium plated steel plus alloy plate. No evidence was found of any great difference in joint strength as is shown in Fig. 2. These data are in agreement with the observations of other workers.[2] The joint strength leveled off at a parts-joining temperature between 475 and 500° F for the 35 per cent tin–65 per cent lead alloy. Since solder of this composition is entirely liquid at temperatures above 475° F, it appeared from the author's tests that a temperature above the liquidus is required for maximum strength. Also temperatures that bring the solder only to the plastic range will not produce a strong joint. This test series also indicated that the appearance of the soldered joint may be misleading. Joints made at 400° F appeared to be good ones with well-formed fillets around the edges, but their strength was only 60 per cent of that of joints made at higher temperatures.

Deposit thickness of the solder exerted but a minor influence on joint strength. Plate thicknesses above 0.0003 inch gave joints of approximately the same strength, and plates with thicknesses as low as 0.0001

*General Electric Co., Electronics Park, Syracuse, N. Y.
†Plating Thickness Gage, General Electric Co., Apparatus Div., Schenectady, N. Y.

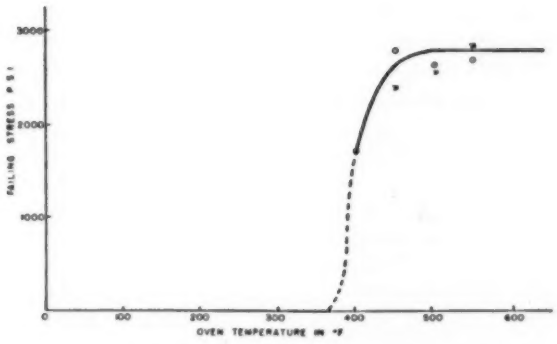


Fig. 2. Joint strength on plated parts with varying temperature. Symbol X = tin-lead alloy deposit on steel; Symbol O = tin-lead alloy deposit on cadmium plated steel; alloy deposit thickness (35 per cent tin–65 per cent lead) between 0.0007 and 0.0009 inch; cadmium deposit thickness at 0.0004 inch. Rosin-alcohol flux used

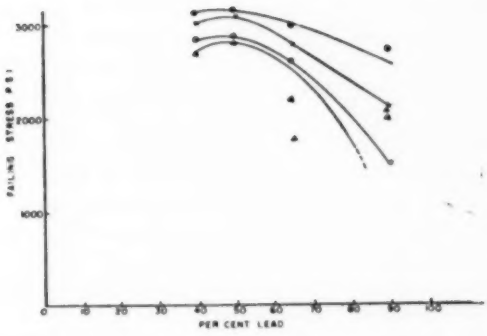


Fig. 3. Variation of joint strength with variation of plated Sn-Pb alloy composition. Oven temperatures for 10–90 per cent tin-lead alloy were at 650° F; other tin-lead alloys were joined at temperature of 475° F. O = Rosin-alcohol flux, X = activated rosin-base flux, ● = organic chloride flux, ▲ = zinc ammonium chloride flux.

inch gave joint strengths 85 per cent as strong as those obtained with deposits of 0.001 inch or greater.

As a result of the operation of clamping these pieces together, some excess solder flowed out of the joint, however, no thickness measurements were made after the soldering was completed. Test pieces also were plated with 0.012 inch of tin-lead alloy and these failed at 2850 lbs, a value which is about the same as that for joints made with thinner plated solder layers.

Fig. 3 indicates that a 50–50 solder gave the strongest joint regardless of the flux used. The activated rosin-alcohol and organic acid fluxes gave stronger joints than pure rosin in alcohol as was expected. The poor showing of the corrosive zinc ammonium chloride flux was unexpected but the poor results may have been caused by the low (475° F) temperature used. This is in agreement with the Tin Research Institute[3] which recommends a soldering temperature of about 540° F for use with zinc chloride fluxes to prevent flux inclusions. The 10–90 (Sn–Pb) alloy was soldered at 650° F and presumably the flux inclusions were prevented and thus allowed a stronger joint to be obtained. It can be seen thus that there is a good possibility of forming weak joints in hand soldering operations where temperature is not well-controlled when zinc chloride fluxes are used.

Tests on the effect of storage time on joint strength indicated only a slight drop in strength after storage of six and nine months. Since it was felt doubtful that parts would be stored much longer than this, no further tests were run. It must be noted, however, that plain nonactivated rosin-alcohol flux was used on these tests. Since the drop in strength was negligible, no tests were run with activated fluxes which previous experience has shown to be more effective. Seabright[4] has shown that solderability of electroplated tin-lead parts is excellent after extended storage periods.

A comparison of tin-lead plate, hot-dip and hand-soldered methods of joining the plates is shown in Fig. 4. In most cases, the joint strengths were the same except when rosin-alcohol flux was used, and here difficulty was encountered in wetting the steel during hand-soldering operations.

The acid flux again gave poor results, probably for the reasons explained previously.

Satisfactory joints were made by tin-lead alloy (solder) plating provided that only one member and an activated flux were used. Poor joints resulted when rosin-alcohol flux was used on one unplated member, but when this member was cadmium or copper plated, satisfactory joints resulted. When the joints were

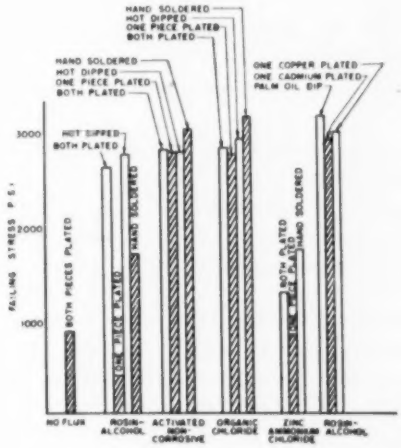


Fig. 4. Comparison of joint strengths resulting from various joining conditions. 40 per cent tin–60 per cent lead. Temperature 475° F

made without flux, a poor joint resulted with about 1/3 the strength of well-bonded specimens.

The failing stresses on the graphs are applicable to an overlap joint with an area of one-square inch, while the load is being applied fairly rapidly at room temperature. When the temperature is higher, or when the joint is loaded over a long period of time, the results will be much lower. Investigations by R. K. Allen[5] indicated that the unit stress that a joint is capable of withstanding decreases as the area of the joint increases. Allen attributed this to the larger percentage of void areas that appear in joints of large area.

This soldering method appears to be well-adapted to automatic or semiautomatic operations for specialized applications. Solder plated parts merely would have to be dipped in flux, then held together in an appropriate jig and sent through an induction heater or oven at the proper temperature.

Although the as-plated appearance of the Sn-Pb solder plate is a drawback, a bright finish may be obtained when the parts are dipped in hot palm oil. The joint strength is about the same, and the bright finish is retained after the joint has been made.

No detailed investigation of cost of solder plating as compared with conventional soldering methods has been made, but in one application[6] the cost of an electroplating operation (including labor and overhead charges) is 1/3 to 1/2 the cost of a hot-dip tinning operation.

Summary: Sn-Pb Coatings on Steel

1. Joint strengths comparable with those made by conventional soldering methods can be made with tin-lead solder plated members by clamping the members together and heating to soldering temperatures.

2. Such joints can be made with rosin-alcohol flux if both members are plated with solder or if one member is plated with tin-lead solder and the other plated with either cadmium or copper.

3. These joints can be made if one member is solder plated and the other is unplated, provided that an activated rosin type flux is used.

4. Thicknesses of 0.0003 inch and over are not critical.

5. Maximum strength is obtained from 50–50 tin-lead compositions

6. Tin-lead plated parts may be stored for extended lengths of time prior to soldering with no significant decrease in resultant joint strength.

Solder (Sn–Pb) Deposits on Aluminum

The desirability of using aluminum in airborne equipment and in some commercial items led to this investigation as a follow-up of the work on steel as reported above. The limited solderability of aluminum poses assembly joining problems, and it was felt that some technique that would allow mass soldering of units would be valuable in many applications. An attempt was made in this investigation to determine the effects of the principal variables which must be controlled in order to obtain a good soldered joint.

Joints were made by plating the aluminum specimens with tin-lead alloy deposits, fluxing, clamping the members together and heating in a furnace to obtain fusion. Various preparatory techniques were used and compared with conventional joining methods.

Although plated aluminum is subject to corrosion, no study was made of this or the treatment necessary to protect it. This article is concerned only with the joint strength properties of tin-lead electrodeposits on aluminum, but the possibility of corrosion should be considered wherever plated aluminum is used.

Procedure

The aluminum test specimens used in the investigation were 1 inch by 3 inches by 0.125 inch and were cut from 52S and 61S alloy sheets.

Since aluminum forms a thin film of oxide which is not receptive to electrodeposits, it was necessary to condition the surface prior to plating. The aluminum pieces had various amounts of oil and grease on the surface and they were cleaned first by an immersion in a commercial aluminum cleaner. Following the cleaning operation, they were rinsed in water and immersed in a 50 per cent by volume nitric acid solution. The panels then were rinsed in water and immersed in a solution of the following composition:

Zinc oxide—100 grams/liter
Sodium hydroxide—525 grams/liter

This solution dissolves the oxide film, thus exposing the aluminum which then goes into solution and replaces an equivalent amount of zinc. Since the aluminum is completely covered with a thin layer of zinc after it has received the zincate treatment, the surface is receptive to copper electrodeposits.[7]

The test specimens were immersed in the zincate solution for 30 seconds except when the effect of immersion times was studied. After the zincate treatment, the specimens were rinsed in water and copper plated in a solution of the following composition:

Copper	15.75 grams/liter
Free cyanide	3.0 grams/liter
Rochelle salts	45.0 grams/liter
Sodium carbonate	30.0 grams/liter
*p*H	10.2 electrometric

The test specimens were plated with approximately 0.00025 inch of copper, except when the effect of thickness of the copper undercoat was studied. After removal from the copper bath, the specimens were rinsed and tin-lead alloy plated in a fluoborate solution[1] of the following composition:

Stannous tin	45.0 grams/liter
Lead	35.0 grams/liter
Free fluoboric acid	50.0 grams/liter
Free boric acid	25.0 grams/liter
Gelatin	4.0 grams/liter

The anodes were a 50 per cent tin–50 per cent lead fine-grain structure alloy and were encased in synthetic fiber bags.*

Except when the effect of solder plate thickness was studied, the specimens were plated with 0.0008 inch of alloy plate. The test specimens then were water rinsed and dried.

The solder plated specimens were dipped in flux, placed in the clamping device (Fig. 1) and heated in a furnace to obtain fusion.

A micrometer was used to measure the thickness of solder plate. Of course, this method was not too accurate, as there were variations in the thickness of the basis metal and also unevenness of plating. However, in order to overcome some of these difficulties and to obtain results that were reasonably accurate, five readings were taken in the area to be soldered, and the plate thickness computed by taking the average value of the differences in readings before and after the specimens were plated. The diameter value thus obtained was halved to arrive at the thickness value. For the copper and the very thin plates of solder, it was necessary to calculate the thickness from the current density-plating time-efficiency tables. Each solution was checked for efficiency by the use of a copper coulometer.

A number of joints were made with conventional hand soldering techniques. Test specimens of the two alloys that were used were cleaned, deoxidized, zincated and copper plated. The copper plate was tinned by heating the strips with a soldering iron, applying flux and then drawing the iron and solder over the piece. The overlap of two pieces was made by heating them with a torch while in position until they were fused together.

Discussion

Effect of Soldering Temperature

As can be seen from Fig. 5, joints which were soldered at a temperature of 450° F were the strongest. The lower joint strength of the tin-lead solder plated test specimens which were soldered at a temperature of 400° F may be attributed to incomplete fusion of the solder at that temperature. The liquidus temperature of the solder used is approximately 440° F and the solidus 361° F.

The lower joint strength of specimens which were soldered at a temperature between 500° F and 600° F may be attributed to the decomposition of the rosin-alcohol flux at the higher temperatures and also the excessive formation of intermetallic compounds. Since one of the variables which governs the rate of alloy formation is temperature, there will, of course, be more alloy formed at the higher temperatures. W. R. Lewis[3] while investigating solders has shown that soldered joints which have thin alloy layers are stronger than those with thick layers.

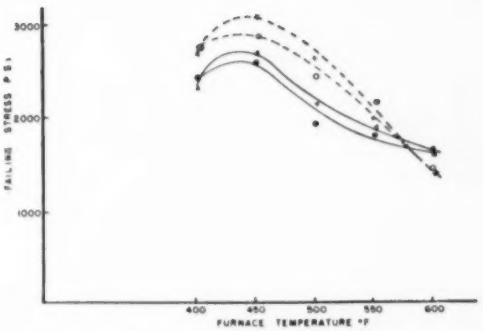


Fig. 5. Effect of soldering temperature on joint strength. Solid-line plots indicate pieces on which a nonactivated rosin-alcohol flux was used. Dotted-line plots indicate pieces on which an activated flux was used. Symbols ●, O represent values obtained on 52S aluminum. Symbols X, ▲ represent values obtained on 61S aluminum

As shown in Fig. 6, joints which were soldered at a temperature of 450° F were strongest when they were maintained at temperature for 15 minutes. An explanation for this is that as the duration of molten contact was increased, more alloy was formed. The alloy formation was not confined to a compact layer, but was somewhat dispersed throughout the solder; therefore, the solder composition, and thus its strength, was changed.

Effect of Zincate Treatment Time

Best results were obtained when 52S alloy specimens were immersed in the zincate solution for periods from 10 to 90 seconds, and 61S alloy specimens for periods from 10 to 120 seconds. From the results obtained

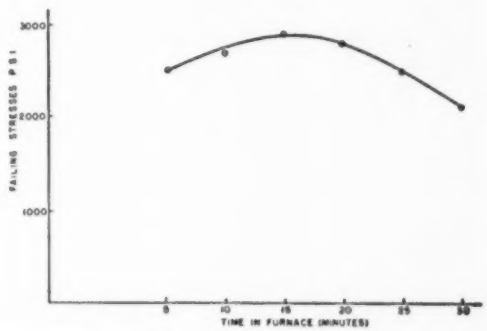


Fig. 6. Effect of time in furnace on joint strength. Aluminum alloy 52S; furnace temperature 450° F; flux—activated rosin-alcohol; plate thickness—0.0008 to 0.001 inch. Solder plate composition—50 per cent tin, 50 per cent lead

*Vinyl type fabric marketed under the trade name, Vinyon.

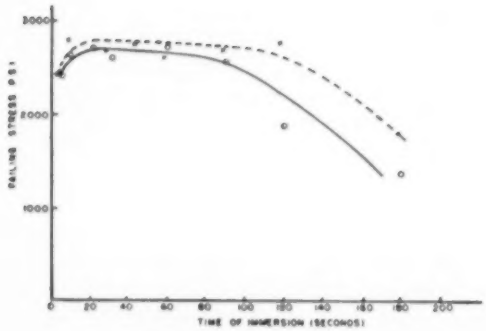
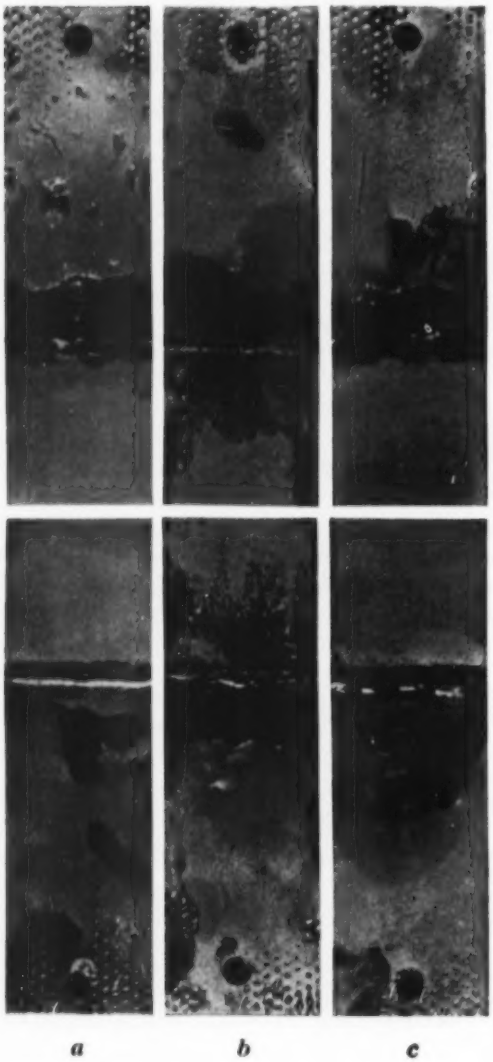


Fig. 7. Effect of immersion time in zincate solution on joint strength. Symbol O curve represents 52S while X curve represents 61S aluminum. Furnace temperature—450° F, flux—rosin-alcohol, plate thickness— 0.0008 to 0.001 inch. Solder deposit—50 per cent tin, 50 per cent lead



a *b* *c*

Fig. 8. Photos of solder joint faces of aluminum test strips after failure, showing different end results. ***a*** *Typical joint.* ***b*** *Joint of 52S alloy test specimens which blistered badly.* ***c*** *Joint of 52S alloy test specimens which were immersed in zincate solution for three minutes*

(Fig. 7), it is apparent that a thin zinc immersion coat provides a better basis for the copper plate than the thicker coats.

The thicker zinc deposits become spongy, and therefore provide a poor surface for the copper plate. By observing the joints after they failed, it could be seen that 52S alloy specimens which were immersed in the zincate solution for 3 minutes failed in spots. This condition is shown in the picture of a joint in Fig. 8.

A number of 52S alloy specimens blistered when they were copper plated, whereas the 61S alloy specimens rarely blistered. Some of the 52S alloy strips which blistered developed only small blisters near the edges. As R. A. Ehrhardt and J. M. Guthrie[3] discovered, the blisters often appeared in rows along the direction of rolling, and seemed to be caused by the segregation of the microconstituents.

During the investigation, several things were noticed in the processing of 52S and 61S alloys. The 52S alloy was susceptible to blistering, while 61S rarely blistered. When the 52S developed small blisters, the test pieces had almost the same strength as the unblistered panels. When the blisters were large, the joint strength was much lower. When the double zincate treatment was used, the results were slightly higher and the blistering of the 52S alloy was almost eliminated. Another treatment which almost eliminated blistering of 52S was that of agitation of the panel in the zincate solution, a step which produced a much smoother and more uniform zinc film.

Effect of Copper Plate and Sn-Pb Solder Plate Thickness

From the results obtained, it was shown that the copper plate must have a minimum thickness of 0.0002 inch in order to obtain a soldered joint having maximum strength.

The aluminum specimens should have a solder plate of at least 0.0003 inch if maximum strength is to be obtained. As the plate thickness is increased above 0.0003 inch, the joint strength does not change. It must be remembered, however, that the specimens used in this investigation merely were clamped together, and no means was provided to separate the surfaces of the two specimens a given distance. When the specimens with the thick solder plate were fused, the excess solder was squeezed out and thus left approximately the same solder thickness between the specimens. Although a nice fillet was obtained when excess solder was squeezed from the joint, it did not change appreciably the strength of the joint.

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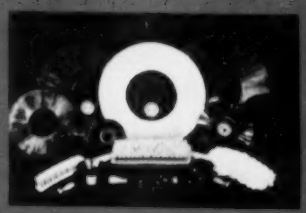

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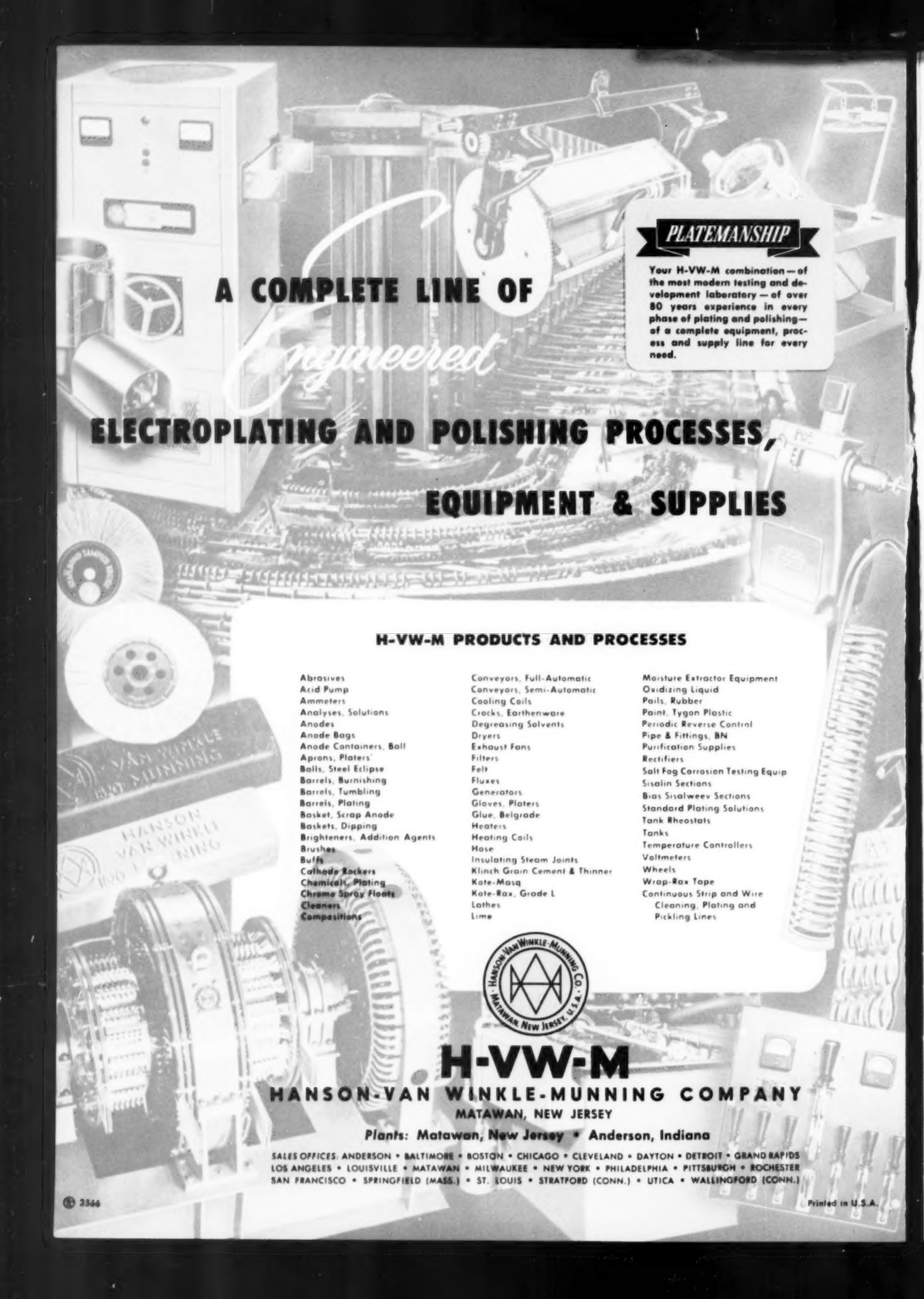

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TABLE I. COMPARISON OF HAND-SOLDERED SPECIMENS

Alloy	Finish	Flux	Solder Composition % Tin–% Lead	Average Strength (PSI)
52S*	Copper Plate	Rosin-Alcohol	50–50	3600
52S	Copper Plate	Rosin Core	30–70	2860
52S	Copper Plate	Activated Rosin-Alcohol	30–70	3100
52S	Copper Plate	Activated Rosin-Alcohol	60–40	3430
61S†	Copper Plate	Rosin-Alcohol	50–50	3035
61S	Copper Plate	Rosin Core	30–70	2970
61S	Copper Plate	Activated Rosin-Alcohol	30–70	3240
61S	Copper Plate	Activated Rosin-Alcohol	60–40	3620
Copper Strip	——	Rosin-Alcohol	50–50	2720
Copper Strip	——	Rosin Core	30–70	2530
Copper Strip	——	Activated Rosin-Alcohol	30–70	2550
Copper Strip	——	Activated Rosin-Alcohol	60–40	3025
52S	Copper & Solder Plates	Rosin-Alcohol	50–50	2600
52S	Copper & Solder Plates	Activated Rosin-Alcohol	50–50	2900
61S	Copper & Solder Plates	Rosin-Alcohol	50–50	2690
61S	Copper & Solder Plates	Activated Rosin-Alcohol	50–50	3110

*Aluminum Company of America designation for wrought aluminum alloy containing 2.5 per cent magnesium, 0.25 per cent chromium.

†Aluminum Company of America designation for wrought aluminum alloy containing 0.25 per cent copper, 0.6 per cent silicon, 1.0 per cent magnesium, 0.25 per cent chromium.

Table I shows the results which were obtained by hand soldering. The copper strips have a lower joint strength than the aluminum, and at present the author has no satisfactory explanation for this phenomenon. In the aluminum specimens, the hand-soldered pieces compared favorably with the furnace soldered specimens.

Summary: Sn-Pb Coatings on Aluminum

1. Good joints on solder plated aluminum can be made using a 50 per cent tin–50 per cent lead alloy with a time of 15 minutes and furnace temperature of 450° F.

2. An activated rosin-alcohol flux gives better results than a straight rosin-alcohol mixture.

3. Minimum thicknesses of copper plate of 0.0002 inch and a solder plate (Sn-Pb) of 0.0003 inch are needed for good joints.

4. The zincate immersion time is not critical if it is held to between 10 and 90 seconds for 52S; 10 and 120 seconds for 61S alloys.

ACKNOWLEDGMENT

The author is indebted to John Guyon and Edwin Steeb who worked on this project while on a Chemical and Metallurgical program assignment to the Electronics Laboratory of the author's company.

REFERENCES

[1]Technical Information Manual, Bulletin LTF-1, General Chemical Company (1946).
[2]Solder and Soldering Technique, Kester Solder Company (1948).
[3]W. R. Lewis, Notes on Soldering, Tin Research Institute (1948).
[4]L. H. Seabright, Iron Age **164**, 93–96 (December, 1949).
[5]R. K. Allen, "Dip Soldering with Lead Base Solders," General Electric Technical Information Series 3W36A6.
[6]L. H. Seabright, Metal Progress **56**, 509–510 (1949).
[7]F. Keller and W. G. Zelley, "Plating on Aluminum Alloys," Proc. Am. Electroplaters' Soc. **36**, 149–162 (1949).
[8]R. A. Ehrhardt and J. M. Guthrie, "Plating on Aluminum," Monthly Rev., Am. Electroplaters' Soc. **34**, 421–428 (1947).

MANAGEMENT PROBLEMS OF THE METAL FINISHING SHOP*

BRUCE E. WARNER†

Introduction

You don't give a hot drink for the bellyache caused by a ruptured appendix. You treat the ailment not the symptom.

At one time or another many have been given this advice. Now the writer is going to apply this same advice to solving some management problems. The underlying causes of trouble—the conditions which create the problems will be discussed. The ailment will be treated rather than the symptom.

The causes of three types of problems will be investigated. These are first, financial; second, organizational; and third, problems resulting from employee attitudes.

The author will not discuss the problems themselves. Instead, ways will be explored to see what may be done to eliminate some of the causes of these problems so that the job of managing will be simpler.

Financial

Most financial problems are solved if one operates with a plan. Managing a business is like riding a horse. There are two ways to do it. The untrained rider struggles aboard the animal by one means or another. The horse ambles away. This type of rider is content to go where the horse takes him. Maybe it is because he doesn't want to start something that he can't carry through. Maybe it is just because he doesn't realize there is a lot more to handling a horse than just going along for the ride. Such a rider is like the business manager drifting without a plan. A business operated this way often blunders along aimlessly until its working capital has been frittered away.

Then there is the trained rider. The moment he is in the saddle the horse knows who is boss. This rider firmly guides the horse along the path he wants it to take, and the horse goes where it is directed. A business manager of such a type is operating with a plan.

The Budget

A very important part of the plan is the budget. One doesn't have to read books on business management to set up a simple budget for a shop any more than one has to read books on budgeting to set one up for one's home. Records will tell what percentage of the sales dollar has been spent for direct labor, indirect labor and other profit-and-loss sheet cost items in past years. A prudent manager decides on the percentage of the sales dollars to spend on each item to be budgeted. He then attempts to keep the amount spent for each budgeted item within the per cent of sales figure selected. As sales increase the business moves further from its break-even point. Then it becomes easier to keep within the budget. As sales drop and the break-even point is approached, some items of cost will exceed the budgeted figure. The very fact that a budget is being used will lower a business' break-even point.

There are more scientific ways of budgeting. But this simple plan is better than no plan at all. It is an initial step in financial planning.

Of course, a shop should have a monthly profit and loss sheet and financial statement. Operating without them is like night driving without lights. One can't know where one is going, and disaster can be expected.

Organizational

Organizational problems begin when the owner decides he no longer has to spend all his time in the shop. He makes his right-hand man a working foreman; then he goes out to call on a customer. A fellow worker questions the new foreman's authority, and trouble results. This trouble ordinarily can be avoided. All that is necessary usually is a clearly written notice spelling out the new supervisor's responsibility and the authority he has been given to handle his job.

Whether there is but one working foreman or a number of supervisors the solution is the same. The duties of each, and the fact that each has been given the authority to do his job, should be put in writing. This is important for four reasons. First, the supervisor must know exactly what is expected of him. Second,

*Presented at the Boston Annual Educational Session, May, 1954.

†President and Treasurer, New England Plating Company, Worcester, Mass.

the other employees must know the extent of his responsibility. Third, both the supervisor and the employees under him must know that he has the necessary authority. Fourth, employees must understand that when he uses his authority properly he will be backed up by his superior.

Line and Staff Method

One method of organizing a business is called line and staff. Line jobs are those of a clear-cut supervisory nature such as president, superintendent and foreman. As a business grows larger, supervisory people need assistants. Such assistant takes care of a particular detail for the supervisor. These details might be solution control, production control or quality control. These are called staff jobs.

Now, staff people often have difficulty getting things done. The other employees know they are not supervisors. Some employees may refuse to cooperate. If staff people are not protected from this, their jobs are miserable and their efficiency suffers.

The answer is a written notice explaining that the person holding a staff job gets his authority from the supervisor on whose staff he works. As long as he is performing his specialized staff duty he speaks for his supervisor. Also, he speaks with the authority of his supervisor. But his supervisory authority does not go beyond that necessary to carry out his particular staff duties.

Organizational Chart Analysis

Here is another common problem having to do with organization. A business grows. Some hard-working supervisor appears to be slipping. Reluctantly, one reaches the conclusion that the supervisor's job has grown too big for him,—that he reached the limit of his ability while the job kept growing. The trouble may be with the job and not with the man. The difficulty should be analyzed by drawing part of an organizational chart. A rectangle is drawn and labeled to represent the supervisor. Then a separate rectangle is drawn for each department or finishing cycle which reports directly to him. Next a line is drawn from the rectangle representing the supervisor to each of the other rectangles. The number of individual rectangles reporting directly to him are counted. In some cases there should not be more than five. In other cases ten would not be too many. It depends on how active the lines of communication are between the supervisor and the operations he controls. Knowledge of each particular shop will help determine this once the chart analysis is made.

If the supervisor seems overworked and the active operations reporting directly to him are well above five, he probably is carrying too great a work load. If he is a superintendent he may need staff assistance. Staff jobs could be set up to handle solution control, production control and quality control. This plan makes the lines of communication to the superintendent less active. He then can supervise more operations efficiently.

If a foreman is overloaded it may be more economical to hire an additional foreman and redistribute the work load. Better supervision could result in savings which would more than offset the increase in supervisory expense.

Labor Problems

Management people generally agree on one thing: the attitude of the average man in the shop toward his job and company changed for the worse during the 40's. There is less agreement on what to do about it.

Worker Attitudes

Now if a man had a job that was all he thought it should be, he would not want to lose it. He would cooperate to the best of his ability. He would probably turn out a little more work than was expected of him. He would not want the boss to feel that a better man might be found to replace him.

Just what does a man look for in his work? What does he expect of it? The following list has been suggested as the six things a worker desires of his job.

1. Fair pay;
2. A congenial environment in which to work;
3. A sense of security;
4. An opportunity for promotion to higher job classifications; to more important tasks;
5. Recognition of his work as being important to the enterprise;
6. Participation. A feeling that his ideas are considered and that he is accepted as a person capable of contributing to the joint effort.

This is not too much for a man to expect. As one looks back over the list it is seen that management people want the same things. What a man desires of his job is basically the same whether he is in the shop or in the front office. All want fair pay. All want congenial working conditions. All want security. Additionally, all want an opportunity to move ahead, to have their work recognized as aiding the company's progress. And all want some degree of participation in company matters.

Employees are contented if these desires are fulfilled.

Employees are dissatisfied if these desires are not realized. Individuals will make suggestions to management to correct conditions they consider unsatisfactory. If management does not satisfy them in one way or another a feeling of frustration results. The search for an outlet for this feeling leads to group organization and group action.

The old management concept of labor treated it as a commodity to be bought at the lowest possible price. The newer concept is that capital, management and labor are all interdependent. The success of one depends upon the welfare of the other two. This gives labor a place on the team.

And now the budget is set up. But the cooperation

of the shop people is needed if one is to stay within it. Labor's place on the team is recognized; so the goal ahead is to work toward satisfying the six job desires. But to get this across to the people in the shop something more is needed and that is a system of effective communications.

Someone once said, "Ignorance breeds suspicion; suspicion breeds fear; fear breeds hate." Suspicion must be overcome. To do so ignorance must be replaced with knowledge. Employees have no sympathy for a plan unless they understand it. They also should know why the plan is important to the success of the business.

Management has no monopoly on brains. Shop people can provide a wealth of ideas because of their specialized knowledge of their jobs. But they must be told the object of the game. They must be given the incentive to play on the team.

The author's company handles communications from management to the shop by bulletin boards and shop meetings. There is real interest in these bulletin boards. Items are removed after three days so employees will check for new material regularly.

Sometimes a notice will not be understood, or some employees may fail to act on a written request. Somebody in the shop will suggest a meeting of all employees so the matter can be explained more fully.

Meetings of all the employees who care to attend are held during a lunch period. Employees are free to eat their lunches while the meetings are going on. They understand that it costs a lot of money to shut down for a meeting during working hours. These meetings are far more effective than written notices.

Something more is needed for communications from shop employees back to management. The author's company has an Employees' Advisory Committee which meets with the company president once a month. Employees ask their representative to bring up matters which they might not care to discuss personally with management.

If a shop is small enough the boss can eat lunch with his employees once in a while, and all these employees can be on an advisory committee. In a larger shop, four or five elected representatives meeting with the manager will accomplish more than a bigger group.

Conclusions

And so, if a shop has no financial plan, the manager is advised to pull cost data out of plant records. He then should evaluate the data, and set up a simple budget.

The positions of the supervisory and staff personnel should be reviewed. Any doubt about the scope of their jobs should be removed and the extent of their authority should be spelled out by written notice.

Then management should consider the reasons for the attitude of its employees. Does the shop satisfy the employees' six job desires? Is the atmosphere in the shop such that employees have an incentive to contribute ideas and expand real effort on the job?

Clarence Francis, Chairman of General Foods, had this to say, "You can buy a man's time, his presence and his motion. But you can't buy his heart's devotion or his enthusiasm. These must be earned. The human will to work cannot be bought."

project no. 4

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*AUTHORS

Effect of Surface Finishing of Nonferrous Base Metals on the Protective Value of Plated Coatings

Review of Literature

The American Electroplaters' Society in 1940 undertook a study, in co-operation with the National Bureau of Standards, to determine whether the finish of steel prior to electroplating affected the protective value of electrodeposits applied thereon. Blum, Lux and Berdick[1,2,3] concluded from their studies that wide differences in the surface finish of the steel had no significant effects on the value of the plated coatings in the outdoor atmosphere.

Pinner,[4] Hothersall and Hammond[5] and Phillips[6] undertook similar studies and found that the salt spray life of the coarser finishes was poorer than that of the finer finishes. In 1940, also, The Toledo Branch, AES, reported on the effect of certain polishing sequences on the corrosion resistance of electroplated nickel coatings on steel[7] and came to the conclusion that "the results obtained confirmed the generally accepted theory that the breaking through or removal of the cold rolled skin definitely affects the corrosion resistance of the dull nickel deposit."

In 1948 M. R. Caldwell[8] reported the effect of polishing on the corrosion resistance of plated zinc die castings. This work was done on castings which exhibited surface porosity decreasing with the depth. Consistent improvement was obtained when 0.005 inch was removed by polishing. The porosity of the original castings was attributed to be the cause of failure.

Purpose and Scope of Project 4

Project 4 was created to extend to nonferrous metals, the work done at the NBS, which had been limited to steel. Since in commercial use the final finishing operation on a brass article rarely is polishing, but mostly buffing, satin finishing, bright dipping or tumbling, this Project was to deal primarily with these methods so far as the rolled brass was concerned. Since in rolled brass the metal may be assumed to be reasonably homogeneous, it is logical to assume that the differences in panels prepared with various finishing methods would be related mainly to differences in surface contour and the presence or absence of cold working in the surface. One need not be concerned about the presence of inclusions, since, fortunately, they are an uncommon occurrence in rolled brass.

With die castings, however, the metal is not homogeneous, consisting rather of a fine-grained, dense outer skin and a softer inner core. In the early days of die casting, when the machines were not able to produce such high pressures as are now being used andthe designs of gates were not as advanced as they are at present, it happened very often that considerable porosity was found in the metal underneath the hard surface. As a consequence, once the polisher cut through the

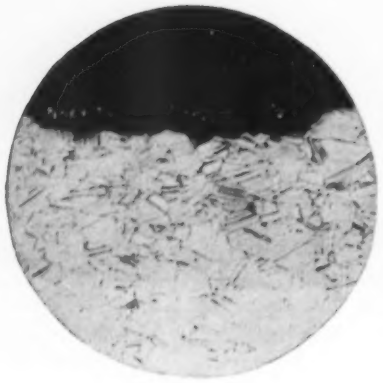

Fig. 1. Area showing dezincification of brass (130 X)

dense casting skin, pores in the metal were opened up. Present day die castings do not show this porous substructure; instead the fine-grained outer skin blends into a coarser-grained inner core.

It was the purpose of this Project to determine the effect of this fine-grained casting skin on the corrosion resistance of plated zinc die castings.

Finishing Methods

The finishing methods selected for rolled brass were:

1. Polish, buff and color
2. Buff and color
3. Electropolish
4. Satin finish
5. Bright dip
6. Barrel burnish

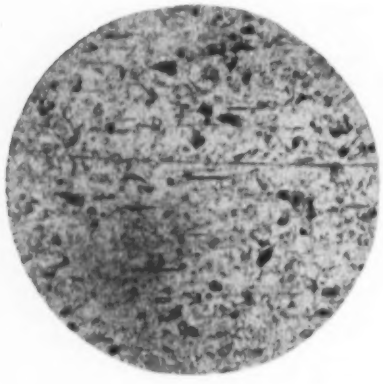

Fig. 2. Surface of lightly polished brass after light etching in NH_4OH-H_2O_2 solution (40 X)

For zinc die castings the following methods were selected:

1. Buff and color, without cutting through the casting skin;
2. Polish to remove casting skin, then buff and color.

Protective Coatings

The protective finishes selected were for brass: Bright nickel and chromium, applied in thicknesses conforming with ASTM Specifications for heaviest deposits—type F. C. calling for nickel of 0.0005 inch, minimum thickness and chromium, 0.00001 inch, minimum.

For zinc die castings the coatings used were: copper flash, bright copper plate, bright nickel plate, and finally chromium plate in accordance with ASTM specifications for heaviest deposits—type F. Z., listed below.

	Thickness of Coating (inch)
Copper plus nickel, min.	0.00125
Copper, min.	0.0004
Final nickel, min.	0.0005
Chromium, min.	0.00001

Members of the Project directing committee decided to use a proprietary bright nickel process* and a proprietary high-speed copper† process as these were already in commercial use at the Project site and the Project director and his assistants were familiar with the operation, maintenance and control of these particular baths.

Three exposure sites for the plated specimens were planned to represent typical rural (State College, Pa.), industrial (New York City), and marine (Kure Beach, N. C.) atmospheric conditions.

Experimental Work

Brass and the Materials and Equipment for Surface Preparation

The material supplied to the Project was cold rolled brass strip, 4 inches wide and about 40 inches long, of a 65/35 alloy, half-hard. The brass used in this project had the following composition by analysis.‡

	Per Cent
Copper	65.84
Zinc (by difference)	34.14
Lead	0.01
Iron	0.01
Rockwell hardness	F-93, B-65

Fig. 1 is a photomicrograph of the brass at 130 diameters revealing that the surface of the brass had been dezincified in spots to about 0.001 inch deep, possibly caused by spattering with a salt solution during storage.

Fig. 2 shows the condition of the brass at 40X after a light polishing by a rubbing action with the fingers and then a light etching in ammonium hydroxide-hydrogen peroxide solution. It is apparent that the stock had become scratched due to handling. The irregularly shaped black spots are magnified roll marks and not inclusions.

Another photomicrograph, Fig. 3, shows the surface at 40x after removal of approximately 0.001 inch by polishing and etching as above. No significant inclusions were observed.

This material was cut into panels of 4 x 4 inches. One hole was drilled in the center of one of the sides, about 3/8 inch in from the edge.

Buffing and Coloring

When an attempt was made to buff and color these panels, considerable difficulty was experienced in holding the panel during the buffing and coloring operation. The size of the panels was reduced from 6 x 4 inches to 4 x 4 inches in order to permit the cross buffing of the pieces. It was felt that buffing only in one direction or only at a small angle to the first buffing direction would not correspond to commercial practice. It proved very difficult to hold these thin panels in the buffing machine with only one retaining screw, particularly in the coloring operation. The buffing wheel first had to pass over a blank surface, then over the panel to be buffed, and finally over another blank surface. When there was any small space between the blank surface and the panel, the coloring wheel dislodged the panel. To overcome this, a special fixture was designed to hold the thin stock in the buffing machine arranged so that the bolt which held the panel was movable in a channel. In this way no space remained between the blank metal and the panel. In other words the blank metal, the panel to be buffed, and the final blank metal were arranged in a step-down design, which prevented the fibers of the buff from tearing under the edge of the panel—an action that had a tendency to lift the panel from its holder.

The precision buffing machine used throughout this investigation was a special development—a machine of a straight line design.** It is designed to allow close control of all variables such as: buffing wheel speed in the range of 1800 to 2250 rpm; control of the pressure of the wheel on the panel; control of the speed with

*Udylite bright nickel process, Udylite Corporation, Detroit, Mich.

†Du Pont high-speed copper process, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

‡Material, photomicrographs and analysis furnished by A. W. Tracy, American Brass Company, Waterbury, Conn.

**Developed by the Armour Research Foundation, Chicago, Ill., for the Hanson-Van Winkle-Munning Company, Matawan, N. J., and loaned to the Project.

which the panel passes under the wheel; and the control of an oscillatory reversing movement of the panel in a direction along the length of the shaft of the buffing wheel. Automatic intermittent application of the buffing compound could be made at an adjustable rate, and after workers became familiar with its operation, it performed most satisfactorily for Project purposes. An ammeter was connected in the line of the 10-horse power motor, to make possible readings of the current flowing in the circuit. This permitted a rough comparison of the relative power consumption. The following operations were carried out on this machine: polishing, buffing, coloring, satin finishing.

The plating was conducted in the pilot plating apparatus at the Waterbury plant of the company in which the Project was located. Here there were set aside for Project use fourteen 30-gallon tanks, one rectifier and one generator, one filter pump and other auxiliary equipment. Other production facilities of the corporation were furnished and included its tool, racking and plating departments and its laboratory.

Electropolishing and tumbling operations were done at the plant of a neighboring company* with their generously offered facilities.

Rolled Brass

Polishing

The directions for the preparations of polishing wheels described in the paper by Lux and Blum[1] were followed. The wheel used was made of felt, headed with 220 emery grain. Well-worn-in wheels rather than fresh wheels were used as it was found that they produced a more uniform finish. As pointed out by the results of Lux and Blum there exists a certain run-in time with new wheels during which the obtained finish changes, and then finally levels off. While Lux and Blum worked with fresh wheels mostly, in the present investigation a set of conditions was chosen which would correspond to operations in commercial practice. A commercial grease lubricating compound was applied to wheels by hand before each pass.

It was found, after considerable experimentation, that felt wheels gave a more uniform surface than setup wheels on sewed buffs. A wheel with a face that was not perfectly straight, would cut a contour of its own into the panel which would produce a rather uneven appearance on the panel.

The polishing specifications follow:

Wheel—Setup wheel, made of felt, headed with 220 grain, with 25 per cent glue binder (one coat glue as base, then two more coats of glue and abrasive)

Speed of wheel—1800 rpm (diameter of wheel—10.5 inches)

Surface Speed—5000 feet per minute

Speed of Panel—Under wheel, 24 feet per minute

Load on Carriage—35 pounds

Current in 10-horse power Motor—7.5 amperes with load and 5.5 amperes at no load

Number of Passes Under Wheel—3 complete passes (one complete pass means that the panel goes once under the wheel against the direction of rotation of the wheel, and returns with the rotation of the wheel)

Weight Loss—In three complete passes –0.350 gram, corresponding to a removal of (0.00016 inch)

Compounds Used for Lubrication—Polishing wheel lubricant containing a combination of beef tallow, fatty acids and waxes.†

Buffing

The buffing cycle that was standardized after some experimentation consists of the following: the wheel was charged with compound, the applicator having been set to advance the compound 0.0025 inch at each application. A panel was passed under the wheel for 2 complete passes, and then turned 180°. The wheel was recharged with compound and the same panel was passed under the wheel for two more complete passes. Again the wheel was charged and the panel turned at an angle of 90° to the first position. The panel was given two passes in this position and then turned 180°. This was called the first round of buffing. Then a second round of buffing was observed with each piece going through all the same positions, with two complete passes under the wheel in each position. The panel finally was given a third round, but this time with three complete passes under the wheel in each position.

Some difficulty with "fish tails" was encountered during the buffing. After some experimentation, it was found that this could be controlled largely by the system of rotating the panel as described above. The use of lighter pressure in the first round with heavier pressures in the later rounds[5] was helpful as was minimizing the loss of abrasive by bringing the wheel quickly into contact with the panel.

The buffing conditions were as follows:

Wheel—Loose buff, with a thread count of 64–68

Speed of Wheel—2250 rpm (diameter of wheel—10¾ inches)

Fig. 3. Brass surface after removal of 0.001 inch by a light polishing-light etching sequence (50x)

Surface Speed—6500 feet per minute

Speed of Panel Under Wheel—24 feet per minute

Load on Carriage—53 pounds in first round, 103 pounds in second and third rounds

Current in 10-horse power Motor—10.5 amperes at 53 pounds load, 17 amperes at 103 pounds load, and 5.5 amperes at no load

Number of Passes Under Wheel—8 complete passes at 53 pounds load, 20 complete passes at 103 pounds load

Weight Loss—0.190 gram in the first round, corresponding to a removal of 0.000086 inch; 0.760 gram in the second round, corresponding to a removal of 0.00034 inch; 0.960 gram in the third round, corresponding to a removal of 0.00043 inch

Compound Used—A commercial Tripoli was used‡

It should be emphasized at this point that the weight loss figures are experimental data that were obtained as spot checks but the calculations of the metal removed are based on the assumption that the metal was removed evenly over the surface. It is known that this is not so, that with a flexible wheel, the metal is cut considerably faster at the edges, corners and holes than on the flat surface. The figures are useful as a check on the uniformity of operations and as a means to gain an idea of the order of magnitude of the metal removed under the specified conditions. These figures show the interesting fact that when the pressure was doubled, the metal removal increased nearly fourfold. This is in contrast with Lux and Blum's data on polishing steel with a setup wheel where the metal

*The Lea Manufacturing Company, Waterbury 20, Conn.

†Compound MT, donated by the Hanson-Van Winkle-Munning Company, Matawan, N. J.

‡TM 109 Tripoli supplied by the Hanson-Van Winkle-Munning Company.

removed, on a doubling of the pressure, was increased only 1½ times.

Coloring

The conditions for color buffing the panels were as follows:

Wheel—Packed loose buff, made up of alternating small and full sheets in the ratio 1:1

Speed of Wheel—2250 rpm (diameter of wheel—11 inches)

Surface Speed—6600 feet per minute

Speed of Panel Under Wheel—24 feet per minute

Load on Carriage—53 pounds

Current in 10-horse power Motor—13 amperes with load, 5.5 amperes with no load

Number of Passes Under Wheel—1 complete pass

Weight Loss—0.030 gram, corresponding to a removal of 0.000014 inch

Compound Used—a proprietary coloring compound was used*

Electropolishing

The electropolishing solution was made up according to the suppliers' directions.†

The corporation is ready to furnish all the details of proper operation of the solution to interested parties.‡

The electropolishing conditions were as follows:

Electropolishing Solutions—The constituents of the bath are phosphoric acid, chromic acid and water.

Activating Solution—The activating solution also was acquired from the supplier of the electropolishing solution.

Cycle of Operations—Panels were cleaned in acetone to remove residual lubricant or oil. They were allowed to dry in air and then they were electropolished for 3 minutes at 130° F. A rinse in cold running water was used prior to a dip in the activating solution. This last mentioned bath was made up with 7 per cent sulfuric acid (by volume of 66° Bé acid) and also contained 8 oz/gal of oxalic acid. Five minutes at 160° F was the length of treatment time that was observed.

Metal removal was found to be 1.90 grams. Since both sides of the panel were electropolished, this corresponded to a removal of 0.00043 inch on each side.

After electropolishing, the panels needed a special activation treatment before plating. In the anodic process of electropolishing a solid passivating film was formed on the metal which had to be removed by suitable treatment. This film was not removed in the usual cleaning operation alone. A panel plated without activation showed blisters immediately after its removal from the plating solution. This indicated an important function of the activating bath.

Satin Finishing

Satin finishing also was carried out on the special buffing machine. The panels were polished only in one position. The compound was applied to the buff by hand and allowed to dry for one minute before polishing.

The conditions for satin finishing were as follows:

Wheel—Loose buff

Speed of Wheel—1800 rpm (diameter of wheel—11 inches)

Surface Speed—5260 feet per minute

Speed of Panel Under Wheel—24 feet per minute

Load on Carriage—15 pounds

Current on 10-horse power Motor—6.5 amperes with load, 5.5 amperes with no load

Number of Passes Under Wheel—5 single passes with the panel passing in the direction of rotation of the wheel

Weight Loss—0.31 gram, corresponding to a removal of 0.00014 inch

Compound Used—A proprietary satin finishing compound**

Bright Dipping

Panels first were cleaned by dipping them in a hot solution of caustic soda. Then they were transferred without rinsing into the bright dip which was contained in an earthenware crock which was placed in a tank filled with cold running water. The caustic cleaning solution was made up to a concentration of 5 oz/gal of sodium hydroxide.

The bright dip solution was made up as listed below:

2 gallons sulfuric acid
1 gallon nitric acid
1 quart water

The cycle of operations was carried out as below:

Panels were cleaned in acetone to remove residual lubricant or oil and then allowed to dry in air. A dip in the caustic solution, followed by a dip in bright dip for 10 seconds were the next steps. A rinse in cold running water, then a drying operation in sawdust completed the cycle. The weight loss was 0.380 gram, corresponding to removal of 0.000085 inch.

(*To be continued*)

*3X White, donated by the Hanson-Van Winkle-Munning Company.

†Supplied by the Battelle Development Corporation, Columbus, Ohio, under their U. S. Patent No. 407,543.

‡Operating and control procedures as developed for commercial operation were not required for this surface study program.

**Compound Grade C donated by Lea Mfg. Company, Waterbury 20, Conn.

Tanks and Linings For

• Plating • Anodizing

• Acid Pickling

• Neutralizing

Knight plating tanks are lined with Sealon, a vinyl plastic with excellent resistance to the corrosive attack of plating solutions.

Advantages of Sealon:

Resists oxidation, water, sunlight
Easily tested electrically
Readily repaired
Less down time
High electrical resistivity
Resists abrasion
Comparatively thin and light weight

Temperature Limitations

Not recommended for temperatures above 150°F. For operation at higher temperatures acid proof brick linings can be installed over Sealon lining. Brick linings should also be used where tank must withstand severe physical abuse.

Lined tanks can be furnished F.O.B. Akron, Ohio, or linings can be installed on the job by experienced field crews.

MAURICE A. KNIGHT
Kelly Ave., Akron 9, Ohio

Acid and Alkali-proof Chemical Equipment

FORTY-FIRST ANNUAL CONVENTION

PROGRAM

JULY 12-15, 1954

NEW YORK CITY

The New York National Convention Committee

Convention Chairman

George Schore
Convention
Chairman

Advisers . . .

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Advisory

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Liaison Among
Committees

Lester Levinson
Secretary and
Program

George Cooperman
Branch Exhibits

Mariano Ranno
Visitors'
Entertainment

Philip Bruno
Outing

Members and Guests

THE city in which Charles Proctor in 1909 started what was to become the American Electroplaters' Society, welcomes the opportunity to play host to the forty-first annual convention. For some three years past, we have been planning to present educational sessions which would surpass any given at previous conventions. We believe that after investigating the subjects covered, you will agree that our educational program is excellent. All fields with which the electroplater finds himself associated are being covered. Modern techniques of application and theory will be expounded fully.

To put the finishing touches to a successful convention, our Visitors' Entertainment Committee is anxious to help you enjoy your stay at New York. The "biggest city in the world" is replete with all forms of entertainment. We hope you will let us plan your theater party, your sight-seeing trip or your trip to the ball park.

Not since 1937 have we in New York been privileged to act as host at an American Electroplaters' Society Convention. Our last meeting has been long remembered. We hope you will look back at the week of July 11, 1954 with equally fond memories.

New York
Convention Committee

George Schore
Chairman

Forty-Fifth Birthday

NEW YORK Branch is celebrating its forty-fifth birthday this year while being host to the forty-first annual convention of The American Electroplaters' Society. We, of New York, have spent three years preparing what we know will be long remembered as one of the outstanding conventions of the Society.

The list of papers and authors, authors who are noted authorities in their particular field, makes promise of a most successful educational session.

We hope you will take advantage of our Visitors' Entertainment Committee to whatever social requirements you may have.

New York extends an invitation to you to help us celebrate forty-five years of active participation in an idea begun by Charles Proctor in 1909.

Angelo Amatore

President
New York Branch

CONDENSED PROGRAM

Eastern Daylight Saving Time Used Throughout Program

CONVENTION REGISTRATION

Convention Registration is Located Outside Grand Ballroom on Mezzanine Floor

Sunday, July 11	1:00 P. M.– 8:00 P. M.
Monday, July 12	8:00 A. M.– 5:00 P. M.
Tuesday, July 13	8:00 A. M.– 4:00 P. M.
Wednesday, July 14	8:00 A. M.–12:00 Noon
Thursday, July 15	8:00 A. M.–12:00 Noon

The registration fee of $20.00 provides each registrant with a book of tickets covering all events.

Table reservations for the Banquet on Thursday, July 15, should be made in advance at the Banquet Reservation Desk outside the Grand Ballroom, starting Wednesday, July 14 at 9:00 A.M.

All events scheduled at the Hotel Statler unless otherwise noted.

Plan To See Exhibits on Mezzanine Floor

SUNDAY, JULY 11, 1954

10:00 A.M.

AES Executive Board Meeting—Executive Secretary's Suite.

12:00 NOON

Metal Finishing Suppliers' Association, Inc., Luncheon—Empire Suite.

2:00 P.M.

National Association of Metal Finishers, Inc., Annual Meeting—Town Room.

Metal Finishing Suppliers' Association, Inc., Board of Directors Meeting—Empire Suite.

6:00 P.M.

National Association of Metal Finishers, Inc., Executive Board Meeting—Town Room

9:00 P.M.

Film, "The Twenty-Four Dollar Purchase," Terry Manos, documentary on New York City. Winner of many national and local prizes on cinematography—Georgian Room.

10:00 P.M.

Get-Together Party, to greet early-comers, Refreshments—Grand Ballroom.

MONDAY, JULY 12, 1954

10:00 A.M.

Opening Session and Business Meeting including keynote address, Grand Ballroom.

12:00 Noon

Metal Finishing Suppliers' Association, Inc., Luncheon, Meeting—Georgian Room.

12:00 Noon

Branch Secretaries' Luncheon—Town Room.

12:00 Noon

Speakers' Luncheon—Manhattan Room.

2:00 P.M.

First Educational Session—Grand Ballroom. Admission by badge.

6:30 P.M.

Past Presidents' Dinner—Past Presidents and their wives are guests of the New York Branch—Sky Top.

9:00 P.M.

International Fellowship Club Open House—Grand Ballroom.

Sponsored by the Metal Finishing Suppliers' Association, Inc.

Refreshments—Dancing to the music of one of the foremost bands in the country.

Buffet served at 10:30 P. M.

Admission by ticket.

TUESDAY, JULY 13, 1954

8:00 A.M.

Speakers' Breakfast—Manhattan Room.

8:00 A.M.

Michigan State Alumni Breakfast—Penn Top North.

9:00 A.M.

Second Educational Session—Georgian Room. Admission by badge.

9:00 A.M.

National Federation of Metal Finishers, Inc., Seminar—Sky Top.

12:30 P.M.

Luncheon to all male registrants of convention. Professor LaYellk talks on "Plating in USSR."—Grand Ballroom.

2:00 P.M.

Third Educational Session—Grand Ballroom—Admission by badge.

2:00 P.M.

National Federation of Metal Finishers, Inc., Seminar—Sky Top.

7:00 P.M.

National Federation of Metal Finishers Dinner—Sky Top.

WEDNESDAY, JULY 14, 1954

8:00 A.M.

Speakers' Breakfast—Manhattan Room.

9:00 A.M.

Fourth Educational Session—Grand Ballroom—Admission by badge.

1:00 P.M.

Outing on the Hudson River Steamer "Liberty Belle"—Leaves 41st Street Pier at 1:00 P.M. Buses start leaving hotel at noon. Entertainment, dancing and boat ride provided by Frederick Gumm Chemical Co., Inc. Catered luncheon will be provided on board. Boat will return at 6:00 P.M.

2:00 P.M.

Editorial Board will hold committee meeting on board Liberty Belle.

8:00 P.M.

Research Committee Meeting—Executive Secretary's Suite.

THURSDAY, JULY 15, 1954

8:00 A.M.

Research Committee Breakfast—Town Room.

8:00 A.M.

Speakers' Breakfast—Manhattan Room.

9:00 A.M.

Fifth Educational Session—Grand Ballroom—Admission by badge.

10:00 A.M.

Annual Golf Tournament—Metal Finishing Suppliers' Association.

2:00 P.M.

Final Business Session, American Electroplaters' Society—Penn Top.

7:00 P.M.

Annual Banquet—Grand Ballroom. Admission only by reservation ticket. In order to be served, your registration book ticket must be exchanged for a special banquet ticket bearing a table reservation. Ticket exchange starts Wednesday at 9:00 A.M. at Banquet Reservation Desk outside Grand Ballroom. Superb cuisine, all-Broadway stage show, continuous dancing till the wee hours. Prizes and awards given at dance.

Program of Sessions

MONDAY, JULY 12, 1954

10:00 A.M.

OPENING SESSION—Statler Hotel, Grand Ballroom. Delegates will register at door before entering to eliminate roll call.

OPENING OF CONVENTION, George Schore, Convention Chairman, presiding.

Invocation by the Reverend Frank C. Mesle, Oneida, N. Y.

Greetings for New York Branch by Mr. Angelo Amatore.

Introduction of AES Officers.

Welcome to City by Mayor of New York.

BUSINESS MEETING OF THE SUPREME SOCIETY, Dr. George P. Swift, AES President, presiding.

2:00 P.M.

FIRST EDUCATIONAL SESSION—Grand Ballroom.

Chairman: Mr. Earl W. Arnold, Los Angeles Branch.

"*Leveling Studies in Cyanide and Acid Copper Plating Solutions*," by Mr. Barnet D. Ostrow and Mr. Fred I. Nobel, Lea-Ronal Inc., New York City.

"*Industrial Applications for Metalized Nonconductors*," by Dr. Harold Narcus, Electrochemical Industries, Worcester, Mass.

"*Modern Industrial Paint Strippers*," by Mr. Rubin Operowsky, Chemclean Products Corp., New York City.

"*Servo Control in the Electropolishing of Wire and Strip*," by Mr. A. Korbelak, Editor of PLATING, and Mr. C. M. Rively, Westinghouse Electric Corp., Bloomfield, N. J.

"*Some Considerations of Importance in Ball Burnishing*," by Mr. A. S. Kohler, Frederick Gumm Chemical Co., Kearny, N. J.

TUESDAY, JULY 13, 1954

9:00 A.M.

SECOND EDUCATIONAL SESSION—Georgian Room.

Chairman: Mr. Edward J. Roehl, Cleveland Branch.

"*Determination of Free Cyanide and Zinc in Zinc Cyanide Solutions*," by Dr. R. F. Muraca, Lehigh University, Bethlehem, Pa.

"*Nickel Plating from the Sulfamate Bath*," by Mr. Richard C. Barrett, Barrett Chemical Products Co., Shelton, Conn.

"*Electrochemical Corrosion Tests*," by Mr. W. J. Pierce and Mr. W. Pinner, Houdaille-Hershey Corp., Detroit, Mich.

"*A New Instrument for Measuring Stress in Electrodeposits*," by Mr. Joseph B. Kushner, Kushner Electroplating School, Stroudsburg, Pa.

"*Effects of Iron on the Physical Properties of Nickel*," by Mr. L. H. Curkin and Mr. R. W. Moeller, Pratt and Whitney Aircraft Co., East Hartford, Conn.

"*Copper-Tin Alloy Plating*," by Dr. Charles L. Faust and Mr. William H. Safranek, Battelle Memorial Institute, Columbus, Ohio.

2:00 P.M.

THIRD EDUCATIONAL SESSION—Grand Ballroom.

Chairman: Mr. Francis T. Eddy, Waterbury Branch.

"*Report by Chairman of AES Research Committee*," by Dr. Earl J. Serfass, Lehigh University, Bethlehem, Pa.

"*Stress in Chromium Electrodeposits*," by Mr. A. C. Tulumello, Dr. E. J. Seyb and Dr. J. E. Stareck, United Chromium, Inc., Detroit, Mich.

"*Taper Sectioning of Basis Metal Surfaces and Electrodeposits*" (Research Project No. 14), by Dr. A. E. R. Westman, Project Director, and Dr. F. A. Mohrnheim, Ontario Research Foundation, Toronto, Canada—to be delivered by Mr. W. M. Tucker, Eastman-Kodak Co., Rochester, N. Y.

"*A Practical Application of Electroless Nickel Plating*," by Mr. John D. MacLean and Mr. Seymour Karten, Bulova Watch Co., New York City.

"*Corrosion Protection of Modern Aircraft*," by Mr. W. F. Castell, Lockheed Aircraft Corp., Burbank, Calif.

"*Disposal of Plating Wastes at a Silverware Plant*," by Dr. B. Dodge and Dr. Charles A. Walker, Yale University, New Haven, Conn.

WEDNESDAY, JULY 14, 1954

9:00 A.M.

FOURTH EDUCATIONAL SESSION—Grand Ballroom.

Chairman: Mr. Robert G. Parker, Bridgeport Branch.

"*Effect and Removal of Lead as an Impurity in Nickel Plating Baths*" (AES Research Project No. 5), by Dr. D. T. Ewing, Mr. C. J. Owen, Mr. J. K. Werner, Mr. W. O. Dow and Mr. R. J. Rowe, Michigan State College, East Lansing, Mich.

"*Effect of Anode Composition in Acid Copper Plating*," by Mr. R. P. Nevers, Mr. R. L. Hungerford and Mr. E. W. Palmer, The American Brass Company, Waterbury, Conn.

"*Technology of Liquid Buffing Compositions*," by Mr. R. V. Twyning, Twyning Chemical Specialties Co., Belvidere, Ill.

THURSDAY, JULY 15, 1954

9:00 A.M.

FIFTH EDUCATIONAL SESSION—Grand Ballroom.

Chairman: Mr. David J. Griffin, Southeastern Branch.

"*A Large Scale Electroless Nickel Custom Plating Shop*," by Mr. Richard W. Landon and Dr. G. Gutzeit, Kanigen Division, General American Transportation Corp., Chicago, Ill.

"*A Correlation of Metallurgical Hardness and Buffability*," by Mr. R. S. Modjeska, Scientific Control Laboratories, Chicago, Ill., and Mr. Harold Faint, Frederic B. Stevens, Inc., Chicago, Ill.

"*The Equipment To Be Used for Determining the Effects of Oxide Films*" (AES Project No. 12), by Dr. H. B. Linford and Mr. David O. Feder, Columbia University, New York.

"*Brass Plating*," by Mr. R. A. Ehrhardt, Mr. K. G. Compton and Mr. G. Bittrich, Bell Telephone Laboratories, New York City.

"*Throwing Power of Tin and Tin-Alloy Plating Solutions*," by Dr. F. A. Lowenheim, Metal and Thermit Corp., Rahway, N. J.

2:00 P.M.

FINAL BUSINESS SESSION—Penn Top.
Presiding Officer: Dr. George P. Swift, AES President.

Welcome, Ladies!

THE largest city in the world bids you welcome. We, of the committee, have prepared a program in which we present many of the outstanding features of New York. For three years, we have been visiting with you in your own branches to determine what would be of interest to you during your visit with us. We feel we have overlooked little but should there be something special you desire, please, look us up.

New York, the entertainment capital of the world, opens its arms and bids you let us show you its historic sites, theaters, radio and television shows, its ball parks; it also bids you visit the Statue of Liberty, United Nations Building, Wall Street, Chinatown and other land sites of which we are justly proud.

We hope your stay will be most enjoyable and pledge to conduct ourselves to this end.

Please accept our most sincere welcome to this, the forty-first annual convention of the American Electroplaters' Society.

The Ladies' Committee

Barbara Schore

Chairman

Ladies Program

SUNDAY, JULY 11, 1954

9:00 P.M.

FILM, "THE TWENTY-FOUR DOLLAR PURCHASE," Terry Manos, documentary on New York City. Winner of many national and local prizes on Cinematography—Georgian Room.

10:00 P.M.

GET-TOGETHER PARTY to greet early-comers. Refreshments—Grand Ballroom.

MONDAY, JULY 12, 1954

10:00 A.M.

OPENING SESSION AND BUSINESS MEETING including keynote address—Grand Ballroom.

1:00 P.M.

BUFFET LUNCHEON AND TALK.
Luncheon sponsored jointly by Lea Manufacturing Corp., Wagner Brothers Co., and F. L. and J. C. Codman Co. Talk by Dr. A. E. Alexander, Assistant Treasurer, Tiffany and Company, New York City.
Attendance by ticket only—Penn Top

9:00 P.M.

INTERNATIONAL FELLOWSHIP CLUB OPEN HOUSE—Grand Ballroom.
Sponsored by the Metal Finishing Suppliers' Association, Inc.
Refreshments. Dancing to the music of one of the foremost bands in the country.
Buffet served at 10:30 P.M.
Admission by ticket—Grand Ballroom

TUESDAY, JULY 13, 1954

11:30 A.M.

LUNCHEON.
Oakite Products, Inc., will sponsor the "Aunt Ella Party." Host: Dave Clarin. Buses will leave hotel at 11:30 A.M. for Tavern on the Green in Central Park, where luncheon will be served at 12:15 P.M.
Admission by ticket.

8:45 P. M.

THEATER PARTY—Sponsored by the Udylite Corporation. Ladies will turn in tickets in book for theater tickets to Broadway show starting Monday afternoon at buffet luncheon. Tickets to leading Broadway plays will be furnished.

WEDNESDAY, JULY 14, 1954

1:00 P.M.

OUTING ON THE HUDSON RIVER STEAMER "LIBERTY BELLE." Leaves 41st Street Pier at 1:00 P.M. Buses start leaving hotel at noon for wharf. Entertainment and dancing as well as boat ride provided by Frederick Gumm Chemical Co., Inc. Catered luncheon will be provided on board steamer. Boat will return at 6:00 P.M.

THURSDAY, JULY 15, 1954

9:00 A.M.

VISIT TO UNITED NATIONS BUILDING. Tour through halls and building of UN. Tour and trip sponsored by Bart-Messing Corp. and Sel-Rex Corp.

2:00 P.M.

PLATO PARTY, Hostess: Joan T. Wiarda. Prizes galore. New York Branch Ladies' gift will be distributed at this party—Penn Top.

7:00 P.M.

ANNUAL BANQUET—Grand Ballroom. Admission only by reservation ticket. In order to be served, your registration book ticket must be exchanged for a special banquet ticket bearing a table reservation. Ticket exchange starts Wednesday at 9:00 A.M. at Banquet Reservation Desk outside Grand Ballroom. Superb cuisine, all-Broadway stage show, continuous dancing till the wee hours. Prizes and awards given at dance.

During the entire Convention, the Rapid Electric Company will donate fresh flowers to the Ladies.

Mrs. B. Schore, Chairman

Mrs. E. Braun

Mrs. M. Cates

Mrs. M. MacStoker

Mrs. R. Cinamon

Mrs. Y. Fusco

Mrs. E. Goldwasser

Mrs. W. Herrmann

Mrs. B. Nadel

Photos of Mrs. Tillie Cooperman, Mrs. Mildred Hartshorn and Mrs. Rose Schneidt, also members of the committee, were not available at press time.

Abstracts of Convention Papers

MONDAY, 2:00 P.M. SESSION

LEVELING STUDIES IN CYANIDE AND ACID COPPER PLATING SOLUTIONS, *by Barnet D. Ostrow and Fred I. Nobel*

Leveling is discussed in copper deposits from high-speed cyanide solutions and from acid-sulfate plating solutions. Results of numerous tests using the Brush surface analyzer are presented. Effects of many variables are discussed—such as solution composition, current density, temperature, addition agents and impurities. Many common and commercial addition agents were studied and results are presented.

INDUSTRIAL APPLICATIONS FOR METALIZED NONCONDUCTORS, *by Harold Narcus*

The paper covers the techniques involved in the field of metalized coatings for industrial purposes. It presents several specially prepared solution formulations and also discusses the required deviations from the conventional electroplating procedures to achieve acceptable results. Also discussed is the employment of metalized nonconductors—specifically plastics, glass, quartz and ceramics in the fields of printed circuitry, electroforming and electronics.

MODERN INDUSTRIAL PAINT STRIPPERS, *by Rubin Operowsky*

Industrial paint stripping has become a major operation in the manufacturing and job finishing plants. The need for economy and speed have resulted in the development of rapid paint strippers. Chemical composition and formulations are given.

SERVO CONTROL IN THE ELECTROPOLISHING OF WIRE AND STRIP, *by A. Korbelak and C. M. Rively*

The paper describes the process and equipment used in the continuous electropolishing of wire and strip. Specifically the authors describe their straight line method which they have used successfully in production to produce a wire of uniformity not attainable by the use of previous techniques. Wire first is electropolished, after which it is measured when necessary and automatically recorrected to the desired diameter by means of an electronic system.

SOME CONSIDERATIONS OF IMPORTANCE IN BALL BURNISHING, *by A. S. Kohler*

The author presents a detailed description of various factors which are of material importance in obtaining a brilliant metallic finish in barrel burnishing operations.

E. Arnold,
Session Chairman
Barnet D. Ostrow
Fred I. Nobel
Harold Narcus

Rubin Operowsky
A. Korbelak
C. M. Rively
A. S. Kohler

Abstracts of Convention Papers

TUESDAY, 9:00 A.M. SESSION

Determination of Free Cyanide and Zinc in Zinc Cyanide Solutions, *by R. F. Muraca*

This paper discusses definitions of the free cyanide content of an alkaline zinc plating bath and proceeds to show that present methods of analysis are laborious and entirely inadequate. This is followed by a discussion of a simple, direct argentometric procedure which will give the free cyanide content of alkaline zinc plating baths. Then a procedure is described for determining the zinc content of the sample that was used for the free cyanide analysis.

Nickel Plating from the Sulfamate Bath, *by Richard C. Barrett*

Historical development of the sulfamate nickel plating bath is discussed and a basic composition of a commercial bath of five years' experience is presented. Particular attention is focused upon the stress-free character of nickel deposits obtained from the sulfamate bath along with data upon other physical properties. Specialized applications concerned with heavy metal deposition under controlled specifications are described and illustrated and include aspects of electroplating nickel in the electrotyping, electroforming, phonograph record and aircraft industries. Control, maintenance, operating techniques and other pertinent data on the sulfamate nickel plating bath are described.

An Electrochemical Corrosion Test for Electrodeposited Metallic Coatings, *by W. J. Pierce and W. Pinner*

A new accelerated corrosion test for electrodeposited metallic coatings, developed primarily as a research tool, is described. The test, which is electrochemical in nature, has been shown to predict service behavior closely. It has potential adaptation as an accepted test.

A New Instrument for Measuring Stress in Electrodeposits, *by Joseph B. Kushner*

An accurate, simple and rapid method and apparatus for the measurement of stress in electrodeposited metals is described, which has very definite advantages over present stress measuring methods. The apparatus itself is self-contained, simple and rugged. It can be used for control purposes right in the plating tank, or for research work with its own tank.

E. J. Rochl, Session Chairman
R. F. Muraca
Richard C. Barrett
W. J. Pierce

W. Pinner
Joseph B. Kushner
L. H. Curkin
R. W. Moeller

Abstracts of Convention Papers

EFFECTS OF IRON ON THE PHYSICAL PROPERTIES OF NICKEL, *by L. H. Curkin and R. W. Moeller*

Stress was intentionally increased in a Watts' type nickel plating solution by addition of fractional gram portions of ferrous chloride. Rotating beam fatigue specimens (R. R. Moore) plated with 0.0003 inch of nickel under these conditions showed reduction in fatigue life directly proportional to the residual stress measured on test pieces plated concurrently.

COPPER-TIN ALLOY PLATING, *by Charles L. Faust and William H. Safranek*

A new process for plating copper-tin alloy gives leveling type plates that smoothen rough basis metal surfaces as much as sixty per cent per 0.0001 inch of plate. The leveling ability of the alloy deposit is influenced considerably by the tin content. The combination of good leveling power and corrosion protection ability makes copper-tin plates attractive for many decorative applications. Throwing power is an important feature of the copper-tin alloy plating bath.

TUESDAY, 2:00 P.M. SESSION

REPORT BY CHAIRMAN OF AES RESEARCH COMMITTEE, *by Earl J. Serfass*

Active projects now being carried out by the Research Committee will be discussed briefly. The financial status of the committee as well as the reports to appear in PLATING will be indicated in outline form. The salient features of certain of the projects as well as their value to the platers from an immediate as well as a long term view will be discussed.

STRESS IN CHROMIUM DEPOSITS, *by A. C. Tulumello, E. J. Seyb and J. E. Stareck*

Stress in different types of electrodeposited chromium has been investigated by the spiral contractometer method of Brenner and Senderoff and the flat strip method described by Graham and Soderberg, Clifton and Philips. Different values obtained by the two methods are explained. Stress in chromium is shown to be correlated with its crack pattern. Certain deposits near the upper limit of the range were found to possess a negative or compressive stress. Curves of stress versus thickness, and stress versus baking temperature as a function of thickness are given.

Charles L. Faust
William H. Safranek
F. T. Eddy, Session Chairman
Earl J. Serfass

A. C. Tulumello
E. J. Seyb
J. E. Stareck
A. E. R. Westman

Abstracts of Convention Papers

TAPER SECTIONING OF BASIS METAL SURFACES AND ELECTRODEPOSITS, *by A. E. R. Westman and F. A. Mohrnheim*

This paper describes an improved taper sectioning technique, adopted since the last AES meeting, which enables such sectioning to be put on a routine basis. In addition, the flatness of taper sections have been investigated by light-cut and interferometer methods. The paper is largely a discussion of techniques.

A PRACTICAL APPLICATION OF ELECTROLESS NICKEL PLATING, *by John D. MacLean and Seymour Karten*

A description of the complete physical layout of the production department developed for this process is given. This includes equipment used for cleaning, rinsing, plating and drying. The solutions, their control and observations on adhesion, color, brightness, rate of deposition, covering power, relative cost and ease of application are discussed fully.

CORROSION PROTECTION OF MODERN AIRCRAFT, *by W. F. Castell*

The proper corrosion protection of exterior and interior surfaces on aircraft is of utmost importance. For the protection of aluminum alloys, the anodizing process is being replaced by chemical film processes. Process and equipment for large aircraft parts are described. Also processes for the protection of magnesium are evaluated briefly.

DISPOSAL OF PLATING WASTES AT A SILVERWARE PLANT *by B. F. Dodge and Charles A. Walker*

The paper covers a modern plant layout for plating waste removal and chemical treatments used.

F. A. Mohrnheim
John D. MacLean
Seymour Karten
W. F. Castell

B. F. Dodge
Charles A. Walker
R. G. Parker,
Session Chairman
D. T. Ewing

Abstracts of Convention Papers

WEDNESDAY, 9:00 A.M. SESSION

THE EFFECTS AND REMOVAL OF LEAD AS AN IMPURITY IN NICKEL PLATING SOLUTIONS, *by D. T. Ewing, C. J. Owen, J. K. Werner, W. O. Dow and R. J. Rowe*

The effects of small amounts of lead present in four types of nickel plating solutions on the appearance, adhesion, ductility, salt spray (fog), corrosion resistance, hardness and throwing power of nickel deposits were studied. Watts' nickel solutions of *p*H 2.2 and 5.2, nickel-cobalt, and organic brightener nickel solutions were used. In general a tendency for all deposits to brighten occurred with increasing lead content. Adhesion remained unchanged. Ductility was not affected appreciably. An increasing lead concentration tended to increase slightly the corrosion resistance of the heavier deposits in the salt spray (fog) corrosion test. Removal of lead was affected through the use of low current density electrolysis. A high-*p*H precipitation also was effective, but at a *p*H of 5.8 the loss of nickel metal became appreciable.

EFFECT OF ANODE COMPOSITION IN ACID-COPPER PLATING, *by R. P. Nevers, R. L. Hungerford and E. W. Palmer*

Contrary to the prevailing belief that copper of the highest possible purity makes the best anode for acid-copper plating, it is shown that far superior anode characteristics can be obtained with coppers containing small amounts of certain definite addition agents. These improved anode coppers are characterized by the fact that no anode sludge of metallic copper particles is formed during electrolysis.

TECHNOLOGY OF LIQUID BUFFING COMPOSITIONS, *by R. V. Twyning*

The following characteristics are described from a practical and chemical point of view; cleanability, emulsion stability, viscosity, cutting power and wheel facing to reduce buff consumption. Consideration is given to primary and secondary emulsifiers, protective colloids, importance of certain surface active agents, effect of abrasive impurities in the emulsion, processing technique and optimum colloidal particle size.

THURSDAY, 9:00 A.M. SESSION

A LARGE SCALE ELECTROLESS NICKEL CUSTOM PLATING SHOP, *by Richard W. Landon and G. Gutzeit*

The scope of this paper is to describe electroless nickel as a corrosion protection medium.

C. J. Owen
J. K. Werner
R. P. Nevers
R. L. Hungerford

R. V. Twyning
D. J. Griffin, Session Chairman
G. Gutzeit
R. S. Modjeska

Abstracts of Convention Papers

A Correlation of Metallurgical Hardness and Buffability, *by R. S. Modjeska and Harold Faint*

Studies on samples of both copper and nickel deposits were conducted. The deposits were rated by different groups of polishers on their relative buffing ease. Microhardness measurements were made to determine if a definite relationship existed between the hardness of a deposit and its buffability. Microscopic examination of deposits were included for comparison of grain structure as a variable in the buffability rating. Hardness measurements were made on all samples both before and after buffing.

The Equipment to be Used for Determining the Effects of Oxide Films, *by H. B. Linford and David O. Feder*

This report gives details of construction of equipment necessary to study the results of electroplating on oxide soiled basis metals. Essentially, the equipment consists of a three-compartment dry box so designed that all experimental work may be conducted in a helium atmosphere, substantially free of moisture and oxygen. The auxiliary equipment necessary to maintain the dry, oxygen-free atmosphere is described.

Brass Plating, *by R. A. Ehrhardt, K. G. Compton and G. Bittrich*

The purpose of this study was to develop a brass plating solution for producing deposits of 65 to 75 per cent copper with a minimum variation of composition with current density. The prime purpose for brass plating was for rubber adhesion. The effects of *p*H, temperature, free cyanide, metal content and metal ratio are discussed.

Throwing Power of Tin and Tin-Alloy Plating Solutions, *by F. A. Lowenheim*

A short review of the theoretical basis of throwing power is given. The throwing power of the stannate tin plating solutions is known to be excellent, but there are few actual published figures. Some experimental data are given to show how throwing power, as measured in the laboratory, is affected by variations in plating conditions. The various tin alloy plating baths: tin-zinc; tin-nickel; tin-copper have not been studied in such detail with regard to throwing power, but such facts as are known about them are reviewed.

Harold Faint
H. B. Linford
David O. Feder
R. A. Ehrhardt

K. G. Compton
G. Bittrich
F. A. Lowenheim

Plated Ware Exhibits

Mezzanine Floor

THE committee, keeping with the custom of previous conventions, has prepared an excellent display of finishes and plated ware. Branches, companies and individuals have spent considerable time and effort to prepare an outstanding display of educational and practical techniques in metal finishing.

Prizes and awards will be made for individual and branch displays. A visit to the Plated Ware Exhibits indeed will prove of interest.

Branch Exhibits Committee

George Cooperman

Visitors' Entertainment Committee

THE convention committee decided to make arrangements for a most successful social meeting by creating the Visitors' Entertainment Committee. The duties of this committee are exactly as the name specifies, i.e., to prepare theater or dinner parties, visits to the ball games, sight-seeing tours, fishing trips, visits to radio or television shows or any other type of entertainment in the city.

Remember when you get to New York, ask for Moe.

The Visitors'
Entertainment Committee

Mariano Ranno

Chairman

ANNUAL REPORTS OF OFFICERS

of the

American Electroplaters' Society

PRESIDENT'S REPORT

Swift

This has been a year marked by many changes in the personnel and methods of operation of the offices of the Society.

The resignation of Dr. D. Gardner Foulke as Executive Secretary in order to return to Industrial Work started a long series of interviews screening prospective candidates for the position, with final choice falling on Mr. P. Peter Kovatis who assumed his duties last August.

During the period between the official closing of Dr. Foulke's tenure and the start of Mr. Kovatis, Dr. Walter Dietrich assumed the burden of directing the National Office in addition to his duties as your Advertising Manager. It was during this interval that a start was made in changing office procedure and routine into a definite business cycle comparable to any reputable industrial organization. Some extremely essential new equipment was added such as desks, chairs and typewriters. Additional office space was also procured. The extreme heat experienced in late June and early July required the addition of air conditioning units for the smaller offices and fans for the larger working space. Further expansion of the use of air conditioners is essential for maximum output from office personnel and is planned for the coming season. A fairly complete separation of Society business functions from those of the publication PLATING was originated with separate books of account as well as separate check accounts for handling finances.

This has continued under Mr. Kovatis who was chosen because of his previous Association, Public Relations and Business Management training to handle the Society side of our "business" rather than the technical side which is in the capable hands of your Editor, Mr. Alexander Korbelak. Office personnel has been transferred to maintain maximum efficiency with relation to temperament and experience. For the first time, we now have a full time bookkeeper with accounting experience and a complete simplified accounting procedure that allows a complete interpretation of the Society's as well PLATING's financial picture at any time. Full approval of our auditors has been given and their cooperation was extremely valuable during this past year.

For the first time, the complete Executive Board met all employees of the Society and received verbal reports from each one as to work, working conditions, recommendations and complaints on an impartial basis at the offices in Newark. This took a complete day and is now scheduled as an annual necessity.

Dr. Dietrich, who has not been in perfect health for some time, was advised by his physician to work at a much slower gait and tendered his resignation to the Executive Board effective April 1. This originated another series of interviews screening more than 120 possible candidates for the position of Advertising Manager, culminating in the selection of Mr. H. George Burnley with the entire Executive Board acting on the final screening as a unit. Mr. Burnley is completely familiar with advertising sales, production and publication practices of a magazine and possesses the necessary experience that our growing membership requires.

This rapid series of major changes has required close supervision from your officers and has required additional visitations to Newark headquarters. From an Executive Board point of view, the improvements and personnel changes have progressed smoothly and the majority of the membership of the Society have possibly not realized that anything has been going on.

While the business side of Society affairs has received more attention than normal this year, your Executive Board has continued to function efficiently in all other respects (which the reports of the other officers will show). Each has carried out completely and efficiently the duties of his office. Your President has made it a point to be present at all meetings of the Research Committee and has attended some meetings of the Editorial Board. The Research Committee is actively pushing more research of immediate value in addition to the normal long range basic work and has in addition undertaken the assembly of methods of chemical analysis for publication within the next two years. The results of the work of this committee are becoming more important each year and has now reached the point where it is imperative that a separate publication account be set up so that we as a Society may publish in book form the material as it becomes available.

The Editorial Board has functioned in accordance with the prescribed rules as set forth in the Society Constitution and Bylaws but to be most efficient, requires a change in those rules. It is hoped that this may be completed during the next year.

Branch visitations have been made as usual with of course some branches disappointed due to conflicts in meeting dates in addition to the usual lack of time available from normal business commitments. These officers' reports are often considered to be "cut and dried" official patter but realistically speaking, they represent a considerable expenditure of time, energy and money on the part of the men that you have selected to represent you. Read them. This year in particular you will find that there has been a distinct attempt made to bring your Society into the fold of "big business" where it belongs and operate the Society on that basis. More of your money has been returned to you in services and more of it has been spent to make it more serviceable to you. Your financial budget was more thoughtfully and factually presented and has been carried through on that basis. The coming year will see more essential expenditures as the need arises and the budget to be presented will carry them to you.

There have been more meetings of the Executive Board but they have been necessary and efficient, pointing more and more to the necessity that the Officers of your Society take less active roles as Committee Chairmen.

The administrative side has been stressed rather than the functional in this report as your other officers have handled that phase. It has been a great pleasure to have worked with these gentlemen for you this past year and every minute of the time has been a pleasure. I wish to thank each of the members of the Executive Board, the Executive Secretary and his staff for the wonderful cooperation received. It has been a great honor to work with them for you at all times. Finally, I wish to thank all of you for the honor bestowed on me and the wonderful cooperation from all Branches and their officers as well as members. This will be continued, I am confident, for the handr to follow are fully capable and equally interested in the welfare and progress of the Society.

GEORGE P. SWIFT

FIRST VICE-PRESIDENT'S REPORT

Schaefer

Over a period of many years the educational program of the Society has been to increase the dissemination of knowledge in the electroplating and allied fields to its members. In a society as with an individual, educational advancement is a lifetime business. In the short span of one year, your First Vice-President has tried to maintain and, if possible, accelerate this traditional growth.

The educational activities of the Society can be conveniently discussed in three areas—at the branch and national levels within the Society, and external activities outside of the Society.

BRANCHES

The hard, solid core of the educational value of any technical society has its beginning at the branch or "grass roots" level. In this respect the educational program of a society is similar to the roots of a plant, for they ultimately determine the quality and quantity of its fruit. The membership interest and the individual personalities of the branches is the chief barometer of the activity in a society. Your Society's constitution encourages this spirit and development in the branches more than a casual observation may indicate.

Necrology

The following members have died during the year. Many of them contributed greatly to the advancement of the Society. Branches and friends mourn their passing.

Boston Branch: Francis Mackie
Bridgeport Branch: Ben Kusterer
Buffalo: George A. Castle
Chicago Branch: E. L. Ingram, J. J. Witte
Detroit Branch: G. W. Onkson, Frank E. Richards, W. R. Shields
Grand Rapids Branch: Russell Fancher, Frank A. Holloway
Hartford Branch: George B. Hogaboom, E. M. Stephenson
Jackson-Lansing Branch: Carl H. Massuch
Los Angeles Branch: Ernest Francis, Richard Herbst, Allen F. Savage
Melbourne Branch: S. R. Dunn
Milwaukee Branch: James F. Hamilton
Newark Branch: Lloyd S. Burns
New Haven Branch: Howard E. Christie
New York Branch: Edwin C. Baker, Benjamin S. Flug, Harry Sussman
Philadelphia Branch: William J. Weder, Sr.
Pittsburgh Branch: John Latz
Saginaw Valley Branch: John A. Spaulding
St. Joseph Valley Branch: Walter Schaub
St. Louis Branch: P. I. Chandeysson, John Marshall, Rees Ricket
San Francisco Branch: Joseph LeRoy
Twin City Branch: Albert A. Joyner
Waterbury Branch: Robert S. Leather
Members-at-Large: Dr. N. Thon, New Jersey; Oscar Rey Varela, Mexico

Our industry with its loyal support in providing many of the branch speakers and the speakers themselves are performing an outstanding educational service to the Society and its members. The healthier the branches are, the stronger our Supreme Society and our industry will become. The branch news and the attendance of this officer at a few branch meetings during the past year attest to a strong, healthy, growing Society.

Supreme Society

Editorial—The past year saw the integration of the papers in Plating and the convention presentations of *Proceedings* into one bound volume. Even though it was practical to incorporate only six months in this first volume, it received wide acceptance. The year 1954 will be covered completely in the second volume which will appear on your desk early in 1955.

AES Volumes—The dream of many members to publish a series of books for the Society moved closer to reality. During this past year a committee has been set up to prepare a bound volume on analytical solution analysis and control. This book will be based in a large part on researches from Project 2. There is a possibility that this book will be ready for the printer early in 1955 and for distribution six months later.

Interim Meeting—The Third Interim Meeting in Toronto in February was very successful. It clearly indicates the growing awareness of the members in the continued development of our Society. It was extremely gratifying to your officers to be present at such a lively, active and interesting meeting of the delegates to discuss present and help formulate future policies of the Society.

External Activities

The Executive Board has encouraged the gradual expansion of our Society into fields allied with plating. One such move was the appointment of advisers to the Editorial Board who are experienced in these fields. The Society is continuing to enhance its position in technical circles by the influence of our excellent Research Committee reports and improved editorial material in the Society's publications.

The Industrial Finishing Expositions which started in 1947 have done much to enhance the Society in the applied engineering world. Since these expositions are held at irregular intervals, their value is not fully appreciated by the members. They have tremendous prestige in the metal finishing industry and will continue to develop and expand in the future.

The past year has been a successful one for the Society, and I wish to thank each and everyone of you for the excellent cooperation and many courtesies extended to me.

R. A. Schaefer

MEMBERSHIP REPORT

April 1, 1954

BRANCH	Membership April 1, 1953	Elected	Reinstated	Transferred in	Transferred Out	Resigned	Suspended	Dead	Net Gain	Membership April 1, 1954*	Sustaining Membership Credits*
Adelaide	52	6	1	..	..	6	..	..	1	53	..
Allentown-Reading	53	..	..	..	..	1	3	..	− 4	49	6
Baltimore-Washington	93	18	1	1	1	4	8	..	7	100	4
Boston	155	13	2	1	3	3	16	1	− 7	148	6
Bridgeport	158	9	..	..	1	2	9	1	− 4	154	4
Buffalo	105	11	2	1	2	3	10	1	− 2	103	1
Chicago	477	25	6	5	7	7	14	2	6	483	85
Cincinnati	92	5	..	2	1	5	5	..	− 4	88	2
Cleveland	236	27	..	4	2	8	11	..	10	246	18
Columbus	52	8	1	..	1	..	..	..	8	60	1
Dallas-Fort Worth	53	6	..	1	1	1	4	..	1	54	..
Dayton	76	14	..	1	2	1	1	..	11	87	3
Detroit	504	119	3	5	16	12	3	4	94	598†	55
Grand Rapids	173	19	..	2	3	4	15	2	− 3	170	13
Hamilton	25	3	..	..	..	..	..	..	3	28	4
Hartford	151	20	..	3	1	3	2	2	12	163	5
Houston	42	1	..	..	1	..	..	..	..	42	1
Indianapolis	105	15	2	2	..	9	..	..	10	115	1
Jackson-Lansing	61	3	1	..	4	3	6	1	−10	51	1
Kansas City	46	6	..	..	..	6	..	..	..	46	..
Lancaster	69	4	..	..	..	..	..	..	4	73	2
Los Angeles	236	62	5	2	..	7	1	3	58	294	14
Louisville	44	5	..	1	1	4	8	..	− 7	37	2
Melbourne	169	17	4	..	..	7	15	1	− 3	167	..
Milwaukee	164	33	15	2	..	1	36	2	11	175	8
Montreal	80	8	..	..	..	..	..	..	8	88	1
Newark	251	30	1	..	4	3	..	1	28	276	11
New Haven	100	..	..	..	1	..	3	3	− 7	93	7
New York	352	50	2	2	5	..	11	3	35	387	19
Philadelphia	198	32	3	2	2	8	7	1	19	217	11
Pittsburgh	142	15	..	1	4	2	12	1	− 3	139	5
Portland	...	18	..	..	..	..	..	..	..	18	..
Providence-Attleboro	95	6	..	..	1	3	5	..	− 2	92	2
Rochester	107	5	6	1	1	3	17	..	− 9	98	3
Rockford	63	13	7	1	..	..	6	..	5	78	3
Saginaw Valley	103	18	1	3	1	4	14	1	2	105	..
St. Joseph Valley	78	11	3	..	1	2	6	2	4	82	4
St. Louis	109	8	..	..	4	..	26	3	25	84	10
San Francisco	74	15	..	1	1	5	7	1	2	76	..
Southeastern	50	5	1	..	..	..	2	..	4	54	1
Springfield	57	13	..	..	1	..	2	..	10	67	2
Sidney	82	9	2	..	..	6	6	..	− 1	81	..
Syracuse	128	43	5	..	3	4	10	..	31	159	5
Toledo	56	10	2	..	..	3	8	..	1	57	3
Toronto	146	17	1	..	..	3	25	..	−10	136	6
Twin City	71	4	..	1	..	2	..	1	2	73	2
Waterbury	130	10	..	1	1	3	1	1	5	135	16
Western-Ontario	22	5	1	..	..	..	..	..	6	28	▲
Wichita	41	5	..	..	..	6	6	..	− 7	34	2
Member-at-Large	138	27	..	..	3	3	1	1	19	157	..
Canadian Branches unallocated											8
Other Credits to be allocated											1
Total	6,064	826	78	48	80	157	342	39	359	6,398	358

*Subject to correction

†Not including 4 members on inactive list by reason of induction into Armed Services.

▲Proper credit to all Canadian Branches not available.

AUDITOR'S REPORT

AMERICAN ELECTROPLATERS' SOCIETY
445 BROAD STREET
NEWARK 2, N. J.

We have examined the balance sheets of the General Fund and Research Fund of the American Electroplaters' Society (New Jersey Corporation) as of March 31, 1954, and the related statements of income and funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances, with the exception that we did not confirm the accounts receivable.

The accompanying balance sheets and statement of income are exclusive of certain accounts described in the notes appended thereto.

In our opinion, the accompanying balance sheets and statements of income, except as indicated above, present fairly the financial position of American Electroplaters' Society at March 31, 1954, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

CLYDE A. ZUKSWERT & CO.
Certified Public Accountants

Newark, N. J.
April 6, 1954

FINANCIAL STATEMENT OF THE SUPREME SOCIETY OF THE AMERICAN ELECTROPLATERS' SOCIETY, INC.

General Fund

BALANCE SHEETS, MARCH 31, 1954 AND 1953, AND COMPARISON

	1954	1953	Increase Decrease*
ASSETS:			
Current Assets:			
Demand deposits:			
Fidelity Union Trust Company (North Ward Branch), Newark, N. J.	$ 38,440.10	$ 56,102.05	$ 17,661.95*
Franklin Washington Trust Company (Washington Branch), Newark, N. J.	$ 22,755.01†	$	$ 22,755.01
Petty Cash	$ 70.00†	$ 70.00	$
United States Treasury bonds: Series K	$ 9,850.00	$ 10,000.00	$ 150.00*
3-1/4%, 6/15/83-78 (at cost)	$ 15,682.20	$	$ 15,682.20
Time deposits:			
American National Building & Loan Association, Baltimore, Md.	$ 10,000.00	$ 5,000.00	$ 5,000.00
Atlanta Federal Savings and Loan Association, Atlanta, Ga.		5,000.00	5,000.00*
Augusta Building & Loan Association, Baltimore, Md.	10,000.00	5,000.00	5,000.00
Aurora Federal Savings & Loan Association, Baltimore, Md.	10,000.00	5,000.00	5,000.00
East Girard Savings & Loan Association, Philadelphia, Pa.	10,000.00	10,000.00	

SECOND VICE-PRESIDENT'S REPORT

Kelly

One of the duties of the Second Vice-President is to assist the branches to increase their membership. This I have endeavored to do.

During the past year, the Society has grown five per cent. This cannot be considered satisfactory since other societies have shown a much greater growth.

One of the most effective methods of increasing membership is to keep the members the branch already has and to get new ones. It is largely the failure to keep the present members which is responsible for our slow growth.

George Schore, of the New York branch and Stuart Krentel, of the Los Angeles branch gave very interesting reports at the Interim Meeting on methods which their branches employ to get and keep members. Branch membership chairmen are going to find these reports very helpful as all delegates will have copies of the proceedings of the Interim Meeting.

An additional membership report will be made at the convention. This report will be a final report showing the number of new branches established and the standing of the branches in membership as well as the gains made.

Your Second Vice-President suggests that the delegates consider establishing a revolving membership committee, since your Second Vice-President has too many other duties to perform this membership task adequately. Furthermore, no one can set up a membership program and have it function properly in one year.

I have visited all of the branches West of Chicago during the past year. I have spoken at their meetings and told them something of the operation of the National Society. I have been pleasantly surprised at the interest which has been shown in society affairs. This interest should, and will, contribute much to the progress of the society.

I have attended all of the Executive Board meetings which have been held during the past year, and have performed such tasks as the President has assigned me to the best of my ability. While society matters have taken a great deal of time they have been quite rewarding.

CLYDE KELLY

THIRD VICE-PRESIDENT'S REPORT

Heiman

Your Third Vice-President has participated in the deliberations and decisions of all the meetings of the Executive Board which, during the past year, directed the policies and business of the Society.

At the same time as the junior member of the Board, I have gone through the process of learning the organization and operation of the many activities of the AES.

At the Columbus Interim Meeting in 1953, while Chairman of the Philadelphia Convention Committee, I was charged with having a Convention Manual written. This was done. The Manual was written by the Chairmen of the various Convention Committees and I wish to thank these people for the time and effort put into this project. We are also indebted to Manson Glover and Clyde Kelly, General Chairmen of the 1950 and 1952 Conventions, respectively, for their help in editing and reviewing this Manual.

The purpose of this Manual is to serve as a guide to future Convention Committees in the mechanics of planning and operating an Annual Convention. It goes into considerable detail and should help to make the work of Convention Committees more effective and efficient. We earnestly hope that the Manual will be supplemented by all future Convention Committees and be completely revised from time to time.

Your Third Vice-President was also charged by the Executive Board with directing the writing of a Branch Officers' Manual. The purpose of this Manual is to serve as a guidebook for Branch Officers in the discharge of the duties and responsibilities of the offices to which they were elected. It will offer practical suggestions and recommendations on Branch functioning and policies in the interest of successful branch operations.

Forty men from fifteen branches have volunteered to write the many sections of the Manual which is expected to be completed by the New York Convention. The Society is greatly indebted to the men who volunteered to write and review the various sections of this Manual.

The office of Third Vice-President has traditionally concerned itself with the Branch Exhibits of the Convention Host

	1954	*1953*	Increase Decrease*
Fidelity Federal Savings & Loan Association, Glendale, Calif.	5,000.00	5,000.00	
Hatboro Federal Savings & Loan Association, Hatboro, Pa.		5,000.00	5,000.00*
Home Building & Loan Association, Los Angeles, Calif.	5,000.00	5,151.13	151.13*
Manchester Federal Savings & Loan Association, Manchester, N. H.	10,000.00		10,000.00
Occident Federal Savings & Loan Association, Baltimore, Md.	5,000.00	5,000.00	
Peoples Federal Savings & Loan Association, Detroit, Mich.		5,000.00	5,000.00*
Progress Federal Savings & Loan Association, Baltimore, Md.	10,000.00	5,000.00	5,000.00
Standard Savings & Loan Association, Baltimore, Md.		5,000.00	5,000.00*
Standard Savings & Loan Association, Detroit, Mich.		5,100.50	5,100.50*
Suffolk County Federal Savings & Loan Association, Babylon, N. Y.		5,151.12	5,151.12*
Surety Savings & Loan Association, Detroit, Mich.		5,000.00	5,000.00*
Total time deposits	$ 75,000.00	$ 80,402.75	$ 5,402.75*
Accounts receivable:			
Advertising, books and reprints	$ 4,959.24†	$ 5,830.77	871.53*
Branch supplies	14.10	64.30	50.20*
Per Capita Tax	247.16	353.38	106.22*
Cleveland Convention	75.62		75.62
Other	10.00	32.23	22.23*
Total Accounts Receivable	$ 5,306.12	$ 6,280.68	$ 974.56*
Advances:			
Industrial Finishing Exposition Committee, Cleveland	$ 2,078.69	$ 1,032.91	$ 1,045.78
Society Control Current Account	265.90†		265.90
Total Current Assets	$ 169,448.02	$ 153,888.39	$ 15,559.63
Deposits:			
Copyright office	$	$ 28.00	$ 28.00*
American Airlines	425.00	425.00	
Postage	416.71†		416.71
Total deposits	$ 841.71	$ 453.00	$ 388.71
Carl E. Heussner Award Fund:			
Fidelity Federal Savings & Loan Association, Glendale, Calif.	3,000.00	$ 3,000.00	
Total assets	$ 173,289.73	$ 157,341.39	$ 15,948.34
LIABILITIES AND FUND			
Current Liabilities:			
Payroll tax deductions	$ 455.72†	$ 405.96	49.76
Advertising advance payments	2,898.36†	2,362.00	536.36
Per capita tax advances		79.03	79.03*
Foreign advances	23.57	26.57	3.00*
Research Fund	167.25	31.95	135.30
Plating Control current account	265.90		265.90
Total current liabilities	$ 3,810.80	$ 2,905.51	$ 905.29

	1954	1953	Increase Decrease*
Unexpended Appropriations of Funds:			
Convention account (Exhibit E)	$	$ 461.66	$ 461.66*
Carl E. Huessner Award Fund	$ 3,109.16	$ 3,056.16	$ 53.00
General Fund (Exhibit D)	$166,369.77	$150,918.06	$ 15,451.71
Total liabilities and fund	$173,289.73	$157,341.39	$ 15,948.34

NOTE: The above Balance Sheet does not include inventories of publications, literature and supplies, office furniture and equipment, accounts payable and prepaid and accrued expenses.

(EXHIBIT A)

"PLATING"
Assets and Liabilities included in the above Balance Sheet.)

	March 31 1954
Current Assets	
Demand deposits:	
Franklin Washington Trust Co. (Washington Branch), Newark, N. J.	$ 22,755.01
Petty Cash	$ 20.00
Accounts receivable:	
Advertising, books and reprints	$ 4,644.44
Society Control current account	$ 265.90
Total current assets	$ 27,685.35
Deposits:	
Postage	$ 35.26
Total assets	$ 27,720.61
Current Liabilities	
Payroll tax deductions	$ 203.36
Advertising Advance payments	2,898.36
Total current liabilities	$ 3,101.72
General Fund (Exhibit D)	$ 24,618.89
Total liabilities and fund	$ 27,720.61

General Fund

STATEMENT OF INCOME FOR THE YEARS ENDED MARCH 31, 1954 AND 1953, AND COMPARISON

	SOCIETY ACCOUNT 1954	1953	Increase Decrease*
INCOME			
Sales:			
"Proceedings"	$ 1,352.22	$ 1,599.97	$ 247.75*
Books and reprints	723.76	1,201.36	477.60*
Glasstone book	90.00	112.70	22.70*
Branch supplies	113.28	144.40	31.12*
Total sales	$ 2,279.26	$ 3,058.43	$ 779.17*

City. During the past year we have served in an advisory capacity to the New York committee, headed by Mr. George Cooperman, which is handling this project in a very capable manner.

I deeply appreciate the honor of the election to this office. It has been a privilege and a pleasure to serve as a member of the Executive Board.

SAMUEL HEIMAN

PAST-PRESIDENT'S REPORT

MacStoker

This is my last report to you, that of the Past President, as a member of the present Executive Board of the AES, a tenure of office that began in Milwaukee in 1949.

The Past President has no particular assignment in his position as such, but traditionally he is usually assigned some specific or general matters for attention and care by the President or the Board as a whole. This year has been no exception; President Swift and First Vice-President Schaefer have asked me to act as liaison with Society Headquarters and staff, particularly because of my proximity to the Home Office at Newark, and my connection with the several changes and the experiences gained during the past five years. I have attempted to carry out those tasks assigned me.

In addition I have attended the full schedule of meetings during the year—of the Executive Board, the Interim Meeting at Toronto last February and some of the Research Committee and Editorial Board meetings. I have visited a number of the Branches but not as many as I would have liked to, and some of the intersociety gatherings also. As I prepare to take my leave of the duties and the personnel of the Executive Board, I trust it will not be seemingly vain if I say to you that I think the Society has gained during the past five years. Certainly in membership numbers, and I believe in educational and technical progress under the able directive of Ralph Schaefer and Clyde Kelly, and the intensive effort of Dr. Heiman to enhance the branches' opportunity to carry on their activities, and under the progressive leadership of our President, George Swift, the overall welfare of the Society, and particularly

our National Headquarters and its staff has advanced and progressed measurably.

In conclusion I would like to pay my respect and tribute to my associates of the Executive Board and major committees of the Society for their conscientious devotion to their duties and their office and their responsibilities, to Secretary Kovatis and the Headquarters staff, and to the delegates and membership of the Society who have so honored me with a place on their governing body

FRANKLYN J. MACSTOKER

EXECUTIVE SECRETARY'S REPORT

Kovatis

The AES Fiscal Year, 1953–1954, was one of healthy progress. It was a year in which membership reached an all-time high of 6,398 as did the Research Sustaining Membership program with 318 members and 358 memberships. Financially speaking, however, the Society again had to rely on PLATING income to defray its current obligations.

FINANCES

The detailed Financial Statement which follows this report shows a very favorable condition on the whole. There was a Society net operating deficit of $8,110.72 and a Publication net excess of $21,391.58, or an excess of $13,280.86 over expenses for the year under the combined Society and Publication Accounts (General Fund). Income from operations was greater than that of last year, excluding Industrial Exposition and Convention receipts. Expenses, however, were $18,174.26 more than last year's figure. Chief reasons for the increase were increase in PLATING costs ($8,045.32), additional office equipment ($2,362.53), salaries ($5,092.47) and officers' travel expense ($793.62).

Additional investments were made during the year and included the purchase of 3¼ per cent Government Bonds, Series 1878–83, par value of $15,000 and the transfer of $35,000 in time deposits from banks paying less than 3 per cent interest to those paying more than 3 per cent. Additional investments are also being planned for the forthcoming fiscal year.

	1954	*1953*	Increase Decrease*
Per capita tax (Pro rata share)	16,109.41	16,524.67	415.26*
Member-at-large dues (Pro rata share)	909.66	369.83	539.83
Interest on investments	2,731.68	1,890.88	840.80
Miscellaneous income	266.39	51.59	214.80
Total income	$ 22,296.40	$ 21,895.40	$ 401.00
EXPENSES:			
"Proceedings" expense	$ 10,596.22	$ 11,893.21	$ 1,296.99*
Copyright expense	4.00		4.00
Books and reprints purchased	524.17	1,147.18	623.01*
Glasstone book royalties	7.80	9.00	1.20*
Branch supplies purchased	77.01	132.82	55.81*
Taxes, excise	37.60		37.60
Salaries (Pro rara share)	10,868.67	9,639.65	1,229.02
Special services rendered (Pro rata share)	385.18		385.18
Traveling expense:			
Executive secretary (Pro rata share)	710.14	1,434.54	724.40*
Officers (Pro rata share)	1,761.58	1,347.33	414.25
Officers' office expense	106.14	103.91	2.23
Furniture and fixtures and office equipment (Pro rata share)	461.51	474.83	13.32*
Furniture and fixtures repairs and replacements	6.50		6.50
Headquarters' office expense (Pro rata share)	3,738.91	3,134.21	604.70
Moving expense		600.00	600.00*
Public Relations (new educational activities, etc.)	2,777.73	1,957.86	819.87
Branch office manual	3.50		3.50
Meetings expense	345.86		345.86
Total expenses	$ 32,412.52	$ 31,874.54	$ 537.98
Net Operating Deficit	$ 10,116.12	$ 9,979.14	$ 136.98
Other Income Charge—Convention Expense)	315.02		315.02
Gross Deficit	$ 10,431.14	$ 9,979.14	$ 452.00
Other Income:			
Industrial Finishing Exposition	$	$ 12,870.35	$ 12,870.35*
Chicago Convention		1,175.69	1,175.69*
Philadelphia Convention	2,320.42		2,320.42
Total other income	$ 2,320.42	$ 14,046.04	$ 11,725.62*
Net (Deficit) or Income Transferred to General Fund	$(8,110.72)	$ 4,066.90	$ 12,177.62*

(EXHIBIT B)

"PLATING" ACCOUNT

	1954	*1953*	Increase Decrease*
INCOME:			
Advertising	$147,121.87	$140,170.69	$ 6,951.18
Less:			
Discounts allowed	$ 2,435.90	$ 2,394.14	$ 41.76
Agency commission	20,323.33	19,979.48	343.85
Total	$ 22,759.23	$ 22,373.62	$ 385.61
Net	$124,362.64	$117,797.07	$ 6,565.57

	1954	1953	Increase Decrease*
Sales:			
Monthly publication	$ 5,810.20)	$ 5,003.43	$ 3,855.49
Reprints	2,413.90)		
Miscellaneous	634.82)		
Per capita tax (Pro rata share)	11,976.79	12,263.95	287.16*
Member-at-large dues (Pro rata share)	545.79	221.89	323.90
Total income	$145,744.14	$135,286.34	$ 10,457.80
EXPENSES:			
Commission, advertising manager	$ 17,253.33	$ 18,063.67	$ 810.34*
Monthly publication expense	65,212.89	57,167.58	8,045.31
Reprint purchases	841.90		841.90
Furniture and fixtures and office equipment (Pro rata share)	2,837.35	474.82	2,362.53
Office equipment repairs (Pro rata share)	59.00		59.00
Promotional advertising expense	1,268.42	1,009.84	258.58
Salaries (Pro rata share)	25,261.89	20,169.42	5,092.47
Special service rendered (Pro rata share)	521.63		521.63
Traveling expense:			
Managing editor	581.08	448.30	132.78
Advertising manager	258.64		258.64
Production manager	101.30)		
Editor and assistant editor	560.33)	755.51	93.88*
Officers (Pro rata share)	1,528.71	735.09	793.62
Copyright expense	48.00	56.00	8.00*
Headquarters' office expense (Pro rata share)	8,018.09	7,836.05	182.04
Total expenses	$124,352.56	$106,716.28	$ 17,636.28
Net Income Transferred to General Fund	$ 21,391.58	$ 28,570.06	$ 7,178.48*

(Exhibit C)

SUMMARY

	Society Account	"Plating" Account	Total
Total income	$ 24,616.82	$145,744.14	$170,360.96
Total expenses	32,727.54	124,352.56	157,080.10
Net (Deficit) or Income Transferred to General Fund	$(8,110.72)	$ 21,391.58	$ 13,280.86

NOTE: The expenses reported do not take into account the changes during the period in inventories of publications, literature and supplies, office furniture and equipment, accounts payable and prepaid and accrued expenses.

General Fund

STATEMENT OF GENERAL FUND ACCOUNT
FOR THE YEAR ENDED MARCH 31, 1954

Balance, April 1, 1953		$ 150,918.06
Add:		
Cancellation of Convention—Appropriation balance	2,170.85	
Net income, PLATING control, for the year ended March 31, 1954, per Exhibit C	21,391.58	
		$ 174,480.49
Deduct:		
Net deficit, Society control, for the year ended March 31, 1954, per Exhibit B		8,110.72
Balance, March 31, 1954		$ 166,369.77

(Exhibit D)

Branch Activities

Four Branch petitions for membership were received during the year. They were the Portland, Ore.; San Antonio, Texas; Southern Tier, New York State (Binghamton-Elmira-Endicott); and Capitol District, New York State (Albany-Schenectady-Troy). Of these, the Portland petition was approved by the Executive Board with the remaining petitions to be acted upon in May. Portland now is in the process of petitioning for a permanent charter. With the addition of the four contemplated branches, the total number of Branches should reach 52 by the end of the 1954–1955 fiscal year.

Branch interest and activity, to a good degree, may be judged by the number of Branch news items appearing in PLATING. A total of 226 items were published in addition to 29 photographs, several line drawings and 18 announcements. Of 29 photographs, 16 were taken by the Editor and Managing Editor with the newly purchased Society camera.

Publications

The PLATING print order for the April, 1954 issue was 8,600 and was distributed as follows:

Members:	
Active and Sustaining	6,724
Subscribers	1,012
Advertisers and Exchange	552
Inventory	312

There was only a decrease of 2 subscribers in comparison to last year's figures. Considering the fact that no effort was made to promote the sale of new subscriptions, and the fact that 33 more pages of advertising were sold this year, reemphasizes two points: (1) PLATING appears to be increasing its importance and value to the plating and metal finishing industries, and (2) that Walter C. Dietrich has done a good "selling" job.

Proceedings were published in record time this year, thanks to the efforts of Editor Al Korbelak and Production Manager Mary Dickinson. Most of the *Proceedings* were in members' hands before Christmas. This year's *Proceedings* featured an 8 x 11¼ inch page publication as compared to a 6 x 9 inch one last year.

Total cost of printing *Proceedings* this year was $1.63 per copy or $1.73 per member. The cost was considerably smaller this year, attributed mostly to a PLATING type setup change brought about by an Executive Board decision. Next year's *Proceedings* cost, however, should run higher, for the reason that in addition to Convention papers, most PLATING article of 1954 will also be published, resulting in a much larger edition.

The AES Newsletter was reactivated and was distributed for the first time after a lapse of two years in January. This organ is issued periodically to Branch Officers and Delegates.

Editorial Board

Two advisers from the organic and polishing and buffing fields were elected to the Editorial Board for a one-year term. They were Dr. G. Klinkenstein (organic) and H. MacAleer (polishing and buffing). Among many recommendations for the improvement of Plating, the Board suggested interspersing research papers over several convention sessions; recommended the formation of a committee on style and format for all Society publications; suggested cartoons and humor; recommended the running of author's photos in connection with Plating articles.

The Board is to be commended for its untiring efforts. For its contributions to Plating and assistance in obtaining good convention papers, the Society is indebted to this group.

Headquarters

The second year of operation in Newark, N. J., found the National office still in a period of adjustment and readjustment.

With an increasing membership and added services, the Executive Board saw the need of additional space and authorized the rental of another office. At the present time, we have three offices on the third floor of the American Building here.

The National office staff now comprises 10 people of whom 7 are girls and 3 men. Only one girl is employed part-time.

Several changes have taken place since the advent of the 1953–1954 fiscal year. Bookkeeping-wise, Plating and Society records have been separated, with a qualified and competent bookkeeper in full charge. In addition, an improved system of record-keeping has been set up for Branches. New typewriters were purchased, new ¾-ton air conditioners were installed in two offices, and other equipment was purchased to increase employee efficiency and morale. Further changes are also being contemplated in the interest of more efficient and pleasant working conditions by the Executive Board.

Dr. D. G. Foulke returned to private industry in the early part of the year after a successful two years as Executive Secretary and Walter C. Dietrich took over the reins in the interim while a replacement was being sought. In January, illness forced Walter Dietrich to submit his resignation after close to five years with Plating. Walter worked through March 31 and is presently reported to be under doctor's care, recuperating nicely. Both Don and Walter did a praiseworthy job for our Society. Walter's successor is H. George Burnley of Saddle River, N. J.

In the eight months as your Executive Secretary, I have visited nine branches. Next year I hope to be able to cover more ground in an effort to establish a closer and better rapport between branches and the National Office.

General Fund

STATEMENT OF RECEIPTS AND DISBURSEMENTS OF APPROPRIATED FUND ACCOUNTS FOR THE YEAR ENDED MARCH 31, 1954

CONVENTION ACCOUNT

April 1, 1953, Unexpended Balance of Convention Profits Appropriated from General Fund		$ 461.66
Add:		
Refund of Philadelphia Convention:		
Advances	$ 1,500.00	
Postage, express and office expense	209.19	1,709.19
Balance of Appropriation Transferred to General Fund		$ 2,170.85

(Exhibit E)

Research Fund

BALANCE SHEETS, MARCH 31, 1954 AND 1953, AND COMPARISON

	1954	*1953*	Increase Decrease*
ASSETS			
Current Assets:			
Demand Deposits:			
Lincoln National Bank, Newark, N. J.	$	$ 24,127.26	$ 24,127.26*
Franklin Washington Trust Co. (Washington Branch), Newark	$ 54,801.78		$ 54,801.78
United States Treasury 2% Bonds due 9-15-53	$	$ 5,000.00	$ 5,000.00*
Time Deposits:			
Atlantic Federal Savings and Loan Association, Baltimore, Md.	$ 5,000.00	$ 5,000.00	
Baltimore Federal Savings and Loan Association, Baltimore, Md.	$	$ 5,000.00	$ 5,000.00
Liberty Federal Savings and Loan Association, Baltimore, Md.	10,000.00	5,000.00	5,000.00
Loyola Federal Savings and Loan Association, Baltimore, Md.	5,075.00	5,151.13	76.13*
Total time deposits	$ 20,075.00	$ 20,151.13	$ 76.13*
Accounts receivable, Research reprints	$ 12.90	$	$ 12.90
Due from General Fund	$ 167.25	$	$ 167.25
Totals	$ 75,056.93	$ 49,278.39	$ 25,778.54
LIABILITIES AND FUND			
Current Liabilities:			
Payroll tax deductions	$ 47.32	$	$ 47.32
Research Fund, per Exhibit G	75,009.61	49,278.39	25,731.22
Totals	$ 75,056.93	$ 49,278.39	$ 25,778.54

(Exhibit F)

Research Fund

STATEMENT AND INCOME AND RESEARCH FUND ACCOUNT FOR THE YEARS ENDED MARCH 31, 1954 AND 1953, AND COMPARISON

	1954	*1953*	Increase Decrease*
INCOME:			
Sustaining membership dues and subscriptions	$ 34,050.00	$ 31,231.50	$ 2,818.50
Sale of reprints	806.18	2,880.90	2,074.72*
Interest on investments	662.50	701.13	38.63*
Per capita tax (Pro rata share)	5,988.39		5,988.39
Member-at-large dues (Pro rata share)	181.93		181.93
Miscellaneous income	656.40	1,423.50	767.10*
Total	$ 42,345.40	$ 36,237.03	$ 6,108.37
EXPENSES:			
Transfer to Canadian Research Fund	$ 5,231.50	$	$ 5,231.50
Transfer to Research Project No. 15		3,000.00	3,000.00*
Project payments to institutions	4,384.91	3,300.00	1,084.91
Project directors and associates	5,075.69	7,608.92	2,533.23*
Reprint purchases	1,505.42	2,792.51	1,287.09*
Supplies	102.26	56.39	45.87
Office expense	35.25	82.53	47.28*
Per capita tax, sustaining members paid to General Fund		1,377.10	1,377.10*
Social security tax	32.15	28.20	3.95
Travel expense	79.18	206.93	127.75*
Meeting expense	64.79		64.79
Miscellaneous expense	103.03	342.61	239.58*
Total	$ 16,614.18	$ 18,795.19	$ 2,181.01*
Excess of Income Over Expenses	$ 25,731.22	$ 17,441.84	$ 8,289.38
Research Fund, Balance April 1	49,278.39	31,836.55	17,441.84
Research Fund, Balance March 31	$ 75,009.61	$ 49,278.39	$ 25,731.22

(Exhibit G)

Statement of Canadian Research Fund

STATEMENT OF RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDED MARCH 31, 1954

Balance, April 1, 1953 (Dominion Bank, Toronto, Canada)			$ 941.64
RECEIPTS:			
American Electroplaters' Society, Research Fund		$ 5,231.50	
Sustaining Membership dues	$ 1,900.00		
Less exchange, etc.	70.18	1,829.82	
Interest		2.73	
Total Receipts		7,064.05	
Total			$ 8,005.69
DISBURSEMENTS:			
Ontario Research Foundation			6,030.64
Balance, March 31, 1954 (Dominion Bank, Toronto, Canada)			$ 1,975.05

(Exhibit H)

Note: All the preceding Balance Sheets and Statements of Income for the year ended March 31, 1954 have been prepared from auditor's report submitted by Clyde A. Zukswert & Co., Certified Public Accountants.

I would be remiss in my duty if I did not give deserving praise to the National Staff for their splendid work and devotion to duty. To Al Korbelak, Walter Dietrich, Mary Dickinson, Miss Marie Citarella, Mrs. Anna Marsh, Mrs. Loretta Ehrhardt, Mrs. Anita Valenza, Miss Gladys Del Tufo and Miss Ann Panico—many thanks. To Don Foulke for his assistance, my sincere appreciation and thanks, also.

This is my first annual report. Since August 1, when I officially took over the duties of Executive Secretary, I have been gratified by the many Society members who have so generously offered their assistance. I appreciate this gesture very much. My sincere thanks to all and especially to the Executive Board for their understanding and guidance in these first few, hectic months of orientation and adjustment.

P. Peter Kovatis

RESEARCH COMMITTEE CHAIRMAN'S REPORT

Serfass

At the beginning of this past year, a total of six (6) AES projects were actively engaged in experimental research at six different institutions. As a result of committee reactivation, at the present writing, we have six projects actively engaged in experimental research, two projects have concluded their work and report writing, and one project is inactive due to the lack of a fellow.

As a result of this somewhat more active program, and further, as a result of earlier efforts of the several project directors, and project directing subcommittees, the information made available through research papers during the past year has been more valuable than ever. It appears that the membership will be assured a steady flow of immediately useful and also fundamental research data from the projects which have been active during the past year.

Policy

Following the usual practice, a large portion of the time devoted by the Research Committee members at their several meetings has been devoted to deciding matters of policy and organization of the various projects. Several changes in

RESEARCH PROJECTS

Project No.	Location	Project Director	Committee Chairman	Fellow	Subject	Remarks
2	Lehigh	Dr. E. J. Serfass	.W Meyer	None Needed	Plating Process Control Handbook	Active
4	.....	.....	M. Diggin	.....	Surface Finishing of Nonferrous Base Metals on the Protective Value of Plated Coatings	Being Concluded
5	Michigan State	Dr. D. T. Ewing	L. Borchert	R. J. Rowe	Effect and Removal of Impurities	Active
6	.....	.....	Dr. L. Weisberg	.....	Porosity of Electrodeposited Metals	Last Report Submitted
10	Yale	Dr. B. Dodge	L. Durney	None Available	Disposal of Plating Room Wastes	Inactive
12	Columbia	Dr. H. B. Linford	E. T. Candee	D. Feder	Cleaning	Active
13	Bureau of Standards	F. Ogburn	C. Sample	R. Hilkert	The Nature, Cause and Effect of Porosity in Electrodeposits	Active
14	Ontario Research Foundation	Dr. Westman	W. Tucker	F. Mohrnheim	Effect of Basis Metal Condition on Plating	Active
15	Detroit Area	None	W. Pinner	None Needed	Accelerated Corrosion Tests	Active

the by-laws have been formulated and adopted by the Committee. Among these changes were several regulating the collection and maintenance of files of the several research projects in the secretary's office.

Following the policy of previous research committees in their endeavor to develop and evaluate new proposals for research projects, your chairman has appointed a number of special task committees. In accordance with previous policy, proposals for new research projects, as submitted by members of the society, are reviewed and discussed in detail by these special committees. If the chairman of the task committee submits a formal proposal to the Research Committee, the Research Committee Chairman then attempts to place a project of the type proposed at a suitable university or research institute. During the past year task committees have been appointed and reports have been received on the following proposals for projects: (1) Micro Throwing Power, (2) Role of the Anion in Plating, (3) Quantitative Measuring Instruments for Platers, (4) Reactivation of Current Distribution Problem.

The Committee has received these task committee reports and is considering the possibility of placing at least one project in the near future.

Status of Research Projects

The Committee, through nine active subcommittees, is now directing six active projects and three relatively inactive projects:

Project 2. This project under the immediate supervision of the writer at Lehigh University is actively engaged in carrying out experimental work as well as literature surveys on analytical methods which may be utilized for the investigation of industrial finishing wastes. Active work is to be continued in the near future on investigation of analytical methods for control of plating processes. The cooperative program with the Ohio River Valley Water Sanitation Commission has been completed, and as a result of this work a compendium of published analytical procedures for industrial finishing wastes has been prepared by the writer and Dr. R. F. Muraca for ORSANCO.

In accordance with special action by the executive board of the AES, the writer is at present attempting to correlate the information obtained in Project 2 as well as certain additional information in the expectation of publishing for the Society a "Process Control Handbook." Although this project is not under the immediate supervision of the Research Committee, the information which will be utilized in the final handbook, for the most part, will have been obtained from the result of AES Research activities.

Project 4—Surface Finishing of Nonferrous Base Metals on the Protective Value of Plated Coatings—Although for some years Project 4 has been inactive from an experimental standpoint, the test panels produced in the early experimental work have been undergoing exposure tests. As a result of the efforts of M. B. Diggin of your Research Committee, information on the many test panel exposures has been correlated into a final report. This final report has been approved by the Research Committee and has been submitted for publication.

Project 5—Effect of Impurities and Purification of Electroplating Solutions—The activity on this project has continued at a high level under the direction of D. T. Ewing at Michigan State. The Vice-Chairman of the Research Committee, Mr. L. C. Borchert, has actively followed the progress of this project in the study of the effects of zinc in nickel plating solutions, as well as in the development of methods of studying the effect and removal of aluminum from nickel plating solutions. It is anticipated that the work of the project will continue for some time.

Project 6—Porosity of Electrodeposited Metals—Although Project 6 has been inactive from an experimental standpoint for some time, a great deal of data which had been collected on the project had not appeared in Plating. Due to the untimely death of Dr. Thon, the project director, it was feared that much of this material would be lost to the Society. Through the efforts of Dr. Lou Weisberg a great deal of this work has been correlated and will appear in Plating within the next few months.

Project 10—Disposal of Plating Room Wastes—Although several publications have emanated from this committee during the past year, no active experimental research has been carried out. Unfortunately, a competent research fellow has not been obtained by Professor Dodge at Yale and no experimental work will be carried out until a new fellow is appointed. This very valuable project, from the standpoint of practical information for the platers will be inactive probably until September.

Project 12—Cleaning and Preparation

of Metals for Electroplating—The very excellent work of Dr. Linford and his co-workers at Columbia on the cleaning of metals has continued actively in the past year. In addition to a number of publications which have appeared recently in PLATING, the committee and the fellow have been active in constructing highly specialized equipment for the study of the cleaning of metals, including the preparation and removal of oxide films.

A paper by Dr. Linford dealing with the construction and use of this specialized equipment will be delivered at one of the educational sessions at our New York Convention.

Project 13—The Nature, Cause and Effect of Porosity in Electrodeposits—This Project now at the Bureau of Standards under the immediate direction of Fielding Ogburn, has obtained Mrs. Hilkert as an associate and is again actively engaged in experimental study. Recently, several new techniques for the study of porosity in electrodeposits have been developed utilizing radioactive tracer techniques. It is anticipated in the near future that very valuable information will appear in publications in PLATING emanating from this project.

Project 14—Effect of Basis Metal Condition on Plating—This research project is being carried out under the immediate direction of Dr. A. E. R. Westman at the Ontario Research Foundation and is continuing its very active program. In addition to the literature survey and study of physical properties of many steel surfaces, a very useful and special technique for taper sectioning of electrodeposits has been developed. Details of this special tool for evaluating electrodeposits will be presented in a paper by Dr. Westman at one of the educational sessions at the New York convention. We anticipate that this project will continue its active research program and that much useful information will be forthcoming within the next year.

Project 15—Accelerated Corrosion Tests—This project under the immediate supervision of Mr. Walter Pinner and District Supervisor C. F. Nixon is by far the most active of all AES Research projects from the standpoint of personnel actively engaged in experimental research. Fifteen outstanding men in the field of electrodeposition are carrying on experimental research on the accelerated corrosion tests in the Detroit area. In a cooperative effort many test panels have been plated and are now on about one out of every six Detroit taxi cabs along with various groups of private cars. Since the Detroit weather has given rise to extremely corrosive conditions, these test panels are now corroding at an unusual high rate. Samples of the slush from the streets and other collection stations are being gathered and analyzed for their various constituents. All of these data will be correlated when the exposure tests have been completed.

In addition to the above accelerated corrosion tests, the project is studying and attempting to evaluate the various accelerated corrosion tests now being utilized by platers. To date there are three new tests which look very promising, but more work is to be done with them before the final test parts are to be exposed in these new tests.

Within the next year, we look forward with great interest to the wealth of valuable information which this committee has been collecting and correlating.

PUBLICATIONS

From June, 1953 to April, 1954 inclusive, a total of fifteen papers appeared in PLATING as a result of experimental research completed by nine projects. A tabulation of these projects and the corresponding publications is given below:

Proj.	Papers	Proj.	Papers
2	2	11	1
5	1	13	2
12	4	14	1
6	2	15	1
10	1		

TOTAL.....15 Papers—9 Projects

The editor now has ready for PLATING, approved by the Research Committee, a total of 15 papers, the results of work of several of the active projects. This unusual backlog is evidence of a sound research program. It is anticipated that much useful, fundamental, as well as practical information will appear in the several articles to be published in PLATING in the near future.

BRANCH CONTRIBUTORS TO RESEARCH FUND

Waterbury Branch.....	$352.14
Jackson-Lansing Branch..	100.00
Los Angeles Branch.....	100.00
Twin City Branch.....	100.00
	$652.14

The above branches have remitted amounts in addition to their per capita tax and are to be commended for doing something "extra" for the AES research program.

FINANCES

The financial statement again reflects an increase in the number of sustaining memberships, as well as an increase in the excess of income over expense. The research fund balance as of March 31, 1954 was $76,984.66, the highest in the Society's history. This total includes $1,975.05 from the Canadian Research Fund.

The Finance Sub-Committee under the direction of Mr. Ray Ledford has been untiring in his efforts to increase the number of sustaining members of the research program. I should personally like to extend the thanks of the Research Committee to the Vice-Chairman, Finance, Ray Ledford, his Co-Chairman Robert Racine and their other co-workers for the excellent job which they have been doing in maintaining the sound financial status of the Research Committee.

In closing, I would like to thank the many members of the AES who have contributed to the success of the research program during the past year. In particular I would like to thank those members who have contributed their services as project directing sub-committee men for their part in the success of the program.

E. J. SERFASS

LAW COMMITTEE CHAIRMAN'S REPORT

Glover

Since its last Annual Report, your Committee has been enlarged by the appointment of George W. Cavanaugh, Syracuse Branch, whose experience in parliamentary practice is extensive and whose ability extends the usefulness of the Committee, During the year the Committee has

(1) Performed the routine duties assigned to it by the Secretary and the Executive Board in preparation of resolutions and proposed amendments,

(2) Prepared for the forthcoming Branch Officers' Manual sections on By-Laws (the Chairman) and How To Conduct a Meeting (Mr. Cavanaugh). The presentation and immediate application of the latter section at the Toronto Interim Meeting will be remembered by Delegates present, including the Chairman of this Committee, as a definite contribution to the education of the Society, and

(3) Reviewed and found in order the proposed By-Laws of Rochester Branch.

MANSON GLOVER

RESEARCH COMMITTEE, 1953-1954

Dr. Earl J. Serfass, *Chairman*
Lehigh University

L. C. Borchert, *Vice-Chairman, Research*
Houdaille-Hershey Corporation

R. F. Ledford, *Vice-Chairman, Finance*
Industrial Filter and Pump Manufacturing Company

R. J. Racine
Wyandotte Chemicals Corporation

Julius Teres
Wright-Patterson Air Force Base

E. R. Bowerman
Sylvania Electric Products, Incorporated

Myron B. Diggin
Hanson-Van Winkle-Munning Co.

Clarence H. Sample
The International Nickel Co., Inc.

Dr. Edward Parker
Technic, Incorporated

Ex-Officio Members

Dr. George P. Swift
AES President

P. Peter Kovatis
AES Executive Secretary

Honorary Member

Dr. William Blum, Washington, D. C.

Liaison Members

R. F. Ledford
AES Representative to ASTM Committee B-8
Industrial Filter and Pump Manufacturing Company

G. E. Best
AES Representative to ASTM Committee D-19
Mutual Chemical Company of America

Finance Subcommittee

R. F. Ledford, *Chairman*
Chicago, Ill.

R. J. Racine, *Cochairman*
Detroit, Mich.

District Captains

Dr. H. L. Kellner
New England Branches

Arthur Wrisberg
St. Louis, Dallas, Houston, Los Angeles, and San Francisco Branches

John Lockerbie
St. Joseph Valley, Indianapolis and Louisville Branches

Fred Fulforth
Baltimore-Washington and Southeastern Branches

Eugene Combs
Ohio State Branches

Raymond Kotz
Rockford, Twin Cities and Milwaukee Branches

G. W. Cavanaugh
Upstate New York Branches

Robert J. Racine
Michigan State Branches

C. Short
Canadian Branches

RESEARCH DIRECTING SUBCOMMITTEE

Leslie C. Borchert, *Chairman*

Clarence H. Sample, *Research Supervisor*
The International Nickel Company, Inc.

Cleve F. Nixon, *Research Supervisor*
General Motors Corporation

Dr. Ralph A. Schaefer, *Research Supervisor*
Clevite-Brush Development Company

Dr. George P. Swift

P. Peter Kovatis

SUSTAINING MEMBERSHIP LIST*

As of April 15, 1954

(Figures in parenthesis indicate number of memberships held)

Accurate Electro-Plating, Inc.
Philadelphia, Pa. (Phil)
Acme Galvanizing, Inc.
Milwaukee, Wis. (Milw)
Acme Plating Company, The
Cleveland, Ohio (Clev)
Acme Steel Company
Chicago, Ill. (Chic)
Adolph Plating, Inc.
Chicago, Ill. (Chic)
Advance Plating Company, The
Cleveland, Ohio (Clev)
Aetna Electroplating Company
Philadelphia, Pa. (Phil)
Alert Supply Company
Los Angeles, Calif. (L. A.)
Allen-Bradley Company
Milwaukee, Wis. (Milw)
Allied Industrial Products, Inc.
Chicago, Ill. (Chic)
Allied Research Products, Inc.
Baltimore, Md. (Bal-W)
Alsop Engineering Corporation
Milldale, Conn. (Hart)
Aluminum Company of America
New Kensington, Pa. (Pitt)
American Anodizing & Plating Company
Chicago, Ill. (Chic)
American Buff Company
Chicago, Ill. (Chic)
American Cabinet Hardware Corporation
Rockford, Ill. (Chic)
American Can Company
Maywood, Ill. (Chic)
American Chemical Paint Company
Ambler, Pa.
American Fixture & Manufacturing Co.
St. Louis, Mo. (St. L.)
American Instrument Company
Silver Spring, Md. (Bal-W)
American Nickeloid Company
Peru, Ill. (Chic)
American Phenolic Corp.
Cicero, Ill. (Chic)
American Radiator & Standard Sanitary Corporation
Louisville, Ky. (Lvlle)
American Smelting & Refining Company
So. Plainfield, N. J. (Nwk)
American Wire Fabrics Corporation
Mt. Wolf, Pa.
American Zinc Institute (5)
New York, N. Y. (N. Y.)
Apex Plating Company
Chicago, Ill. (Chic)
Apollo Metal Works
Chicago, Ill. (Chic)
Apothecaries Hall Company
Waterbury, Conn. (Wtby)
Ardco, Incorporated
Chicago, Ill. (Chic)
Arnold, Schwinn & Company
Chicago, Ill. (Chic)
Arrow-Hart & Hegeman Electric Co.
Hartford, Conn. (Htfd)
Arrow Plating Company, Inc.
Chicago, Ill. (Chic)
Arvin Industries, Inc.
Columbus, Ind. (Clbs)
Associated Plating Company
Los Angeles, Calif. (L. A.)
Atlas Plating Works
Cicero, Ill. (Chic)
Auto City Plating Company
Detroit, Mich. (Detr)
Automotive Rubber Company
Detroit, Mich. (Detr)
Autoyre Company, Inc.
Oakville, Conn. (Wtby)

Baker Bros., Inc.
So. Boston, Mass. (Bost)
M. E. Baker Company
Cambridge, Mass. (Bost)
Bart Laboratories Company, Inc.
Belleville, N. J. (Nwk)
Bart-Messing Corporation
Belleville, N. J. (Nwk)
Bastian-Blessing Company, The
Chicago, Ill. (Chic)
Beacon Supply Company
Chelsea, Mass. (Bost)
Beech Aircraft Corporation
Wichita, Kansas (Wich)
Belke Manufacturing Company
Chicago, Ill. (Chic)
Bell & Howell Company
Chicago, Ill. (Chic)
Bell Telephone Laboratories, Inc.
Murray Hill, N. J. (Nwk)
Bendix Prods. Div., Bendix Aviation Corp.
So. Bend, Ind. (St Jo)
Berteau-Lowell Plating Works
Chicago, Ill. (Chic.)
Bethlehem Steel Company, Inc. (2)
Bethlehem, Pa. (Al-Rd)
Big Ben Petroleum Products Co.
Chicago, Ill. (Chic)
Blakeslee, G. S. & Company
Cicero, Ill. (Chic)
Briggs Manufacturing Company
Detroit, Mich. (Detr)
Brookline Electro Platers, Inc.
Chicago, Ill. (Chic)
Bruce Products Corporation
Howell, Mich. (Detr)
Buckeye Products Company, The
Cincinnati, Ohio (Cinc)
Buckingham Products Company
Detroit, Mich. (Detr)
Chandeysson Electric Company
St. Louis, Mo. (St. L.)

Chase Brass & Copper Company
Waterbury, Conn. (Wtby)
Chemical Corporation, The
Springfield, Mass. (Spfd)
Chicago Electro-Platers Institute
Chicago, Ill. (Chic)
Chicago Roller Skate Company
Chicago, Ill. (Chic)
Chicago Thrift-Etching Corp.
Chicago, Ill. (Chic)
Christie Plating Company
Groton, Conn. (N. H.)
Chrome-Rite Company (2)
Chicago, Ill. (Chic)
Chromium Corporation of America
New York, N. Y. (Chic)
Chromium Process Company, The
Derby, Conn. (N. H.)
Chrysler Corporation (2)
Detroit, Mich. (Detr)
Clayton Mark & Company
Evanston, Ill. (Chic)
Clevite-Brush Development Company, Division of Clevite Corporation
Cleveland, Ohio (Clev)
Clinton Company, The
Chicago, Ill. (Chic)
Clinton Supply Company, Inc.
Chicago, Ill. (Chic)
Codman, F. L. & J. C. Company
Rockland, Mass. (Bost)
Continental Can Company
Coffeyville, Kansas (Wich)
Corona Corporation
Syracuse, N. Y. (Syr)
Cowles Chemical Company
Cleveland, Ohio (Clev)
Crane Company
Chicago, Ill. (Chic)
Croname, Incorporated
Chicago, Ill. (Chic)
Crown City Plating Company
Pasadena, Calif. (L. A.)
Crown Cork & Seal Company
Baltimore, Md. (Bal-W)
Crown Rheostat & Supply Company
Chicago, Ill. (Chic)
Cutler-Hammer Company
Milwaukee, Wis. (Milw)

Darco Dept., Atlas Powder Company
New York, N. Y. (N. Y.)
Davies Supply & Manufacturing Company
St. Louis, Mo. (St. L.)
Detroit Plating Industries
Detroit, Mich. (Detr)
Diamond Alkali Company
Painesville, Ohio (Clev)
Diamond Plating Company
Memphis, Tenn. (S'east)
Diversey Corporation, The
Chicago, Ill. (Chic)
Dixie Electro Plating Company
Houston, Texas (Hstn)
Doehler-Jarvis Corporation (2)
Grand Rapids, Mich. (Gr R)
Donald Sales & Mfg. Company
Milwaukee, Wis. (Milw)
R. R. Donnelley & Sons Company
Chicago, Ill. (Chic)
E. I. duPont de Nemours & Company
Wilmington, Del.
Dura Div., Detroit Harvester Company
Toledo, Ohio (Tldo)
Duro-Chrome of Chicago, Inc.
Chicago, Ill. (Chic)

Eastman Kodak Company (2)
Rochester, N. Y. (Roch)
Eaton Manufacturing Company
Cleveland, Ohio (Clev)
Ekco Products Company
Chicago, Ill. (Chic)
Electric Auto-Lite Company, The (2)
Toledo, Ohio (Tldo)

*Branch credits subject to correction.

Electro Glo Company
Chicago, Ill. (Chic)
Electrolux Corporation
Greenwich, Conn.
Electro-Platers Company
Milwaukee, Wis. (Milw)
Enthone, Inc.
New Haven, Conn. (N. H.)
Felt & Tarrant Manufacturing Company
Chicago, Ill. (Chic)
Finishing Publications, Inc.
Westwood, N. J. (Nwk)
Ford Motor Company (5)
Detroit, Mich. (Detr)
Formax Manufacturing Company
Detroit, Mich. (Detr)
Frigidaire Div., General Motors Corp.
Dayton, Ohio (Dayt)
General American Transportation Corp., Kanigen Division
Chicago, Ill. (Chic)
General Electric Company
Schenectady, N. Y.
Research Laboratories Division,
General Motors Corporation (5)
Detroit, Mich. (Detr)
Gerity-Michigan Corporation
Adrian, Mich. (Detr)
Gorham Manufacturing Company
Providence, R. I. (Prov-A)
Graham, Crowley & Associates, Inc.
Chicago, Ill. (Chic)
Graham Plating Works
Chicago, Ill. (Chic)
Grand Plating Company
Chicago, Ill. (Chic)
Grand Rapids Plating Company
Grand Rapids, Mich. (Gr R)
Great Lakes Industries, Inc.
Chicago, Ill. (Chic)
Gumm, Frederick, Chemical Company
Kearny, N. J. (Nwk)
C. Hager & Sons Hinge Mfg. Co.
St. Louis, Mo. (St. L.)

Hall-Mack Company
Los Angeles, Calif. (L. A.)
Hamilton Watch Company
Lancaster, Pa. (Lanc)
Hammond Machinery Builders, Inc.
Kalamazoo, Mich.
Hanson-Van Winkle-Munning Co. (3)
Matawan, N. J. (Chic-Nwk)
Harding Manufacturing Company
Detroit, Mich. (Detr)
Hardwood Line Manufacturing Company
Chicago, Ill. (Chic)
Harshaw Chemical Company, The (3)
Cleveland, Ohio (Clev)
Haviland Products Company
Grand Rapids, Mich. (Gr R)
Heil Process Equipment Corporation
Cleveland, Ohio (Clev)
Heywood-Wakefield Company
Gardner, Mass. (Chic)
Houdaille, Hershey Corporation (3)
Detroit, Mich. (Detr)
Howard Plating Industries, Inc.
Royal Oak, Mich. (Detr)
Howell Company, The
St. Charles, Ill. (Chic)
Hub Plating Works, Inc.
Broadview, Ill. (Chic)
Hudson Motor Car Company
Detroit, Mich (Detr)
R. O. Hull & Company, Inc.
Rocky River, Ohio (Clev)
Hy-Grade Electroplating Company
Newark, N. J. (Nwk)

Industrial Filter & Pump Mfg. Co.
Chicago, Ill. (Chic)
Industrial Stamping & Mfg. Co., Division of Vinco Corp.
Detroit, Mich. (Detr)
International Business Machines Corp.
Endicott, N. Y.
International Nickel Co., Inc., The (5)
New York, N. Y. (N. Y.)
International Silver Company
Meriden, Conn. (Wtby)

James Plating Works, Inc.
Chicago, Ill. (Chic)
Jervis Corporation
Grandville, Mich. (Gr R)
Jones & Laughlin Steel Corporation
Pittsburgh, Pa. (Pitt)

Kaynide Div., Kraft Chemical Co.
Chicago, Ill. (Chic)
Keeler Brass Company
Grand Rapids, Mich. (Gr R)
Kelly Plating Company, The
Cleveland, Ohio (Clev)
Knape & Vogt Manufacturing Company
Grand Rapids, Mich. (Gr R)
Knapp-Monarch Company
St. Louis, Mo. (St. L.)
Knight Plating Company
Detroit, Mich. (Detr)
Kocour Company
Chicago, Ill. (Chic)
Kohler Company
Kohler, Wis. (Milw)

Lane Plating Works
Dallas, Texas (Da-Ft W)
Lasalco, Inc.
St. Louis, Mo. (St. L.)
Lea Manufacturing Company, The
Waterbury, Conn. (Wtby)
Leeds & Northrup Company
Philadelphia, Pa. (Phil)
Levco Metal Finishers, Inc.
Long Island City, N. Y. (N. Y.)
Chas. F. L'Hommedieu & Sons Company
Chicago, Ill. (Chic)
Lyon, Incorporated
Detroit, Mich. (Detr)

Maas & Waldstein Company
Newark, N. J. (Nwk)
W. D. MacDermid Chemical Company
Bristol, Conn. (Wtby)
MacDermid, Incorporated
Waterbury, Conn. (Wtby)
Magnuson Products Corporation
Brooklyn, N. Y. (N. Y.)
R. C. Mahoney
Detroit, Mich. (Detr)
P. R. Mallory & Company, Inc.
Indianapolis, Ind. (Idpls)
Manderscheid Company, The
Chicago, Ill. (Chic)
Matchless Metal Polish Company, The
Chicago, Ill. (Chic)
Mattatuck Manufacturing Company
Waterbury, Conn. (Wtby)
Maurer Supply Company
St. Louis, Mo. (St. L.)
McGean Chemical Company, The
Cleveland, Ohio (Clev)
Meaker Company, The
Chicago, Ill. (Chic)
Mechanical Plating Company
Chicago, Ill. (Chic)
Mercil Plating Equipment Company
Chicago, Ill. (Chic)
B. Mercil & Sons Plating Company
Chicago, Ill. (Chic)
Metalcraft Corporation
Chicago, Ill. (Chic)
Metal Mouldings Corporation
Detroit, Mich. (Detr)
Metal Processing Company
Chicago, Ill. (Chic)
Michigan Bumper Corporation
Grand Rapids, Mich. (Gr R)
Michigan Chrome & Chemical Company
Detroit, Mich. (Detr)
Midwest Chrome Process Company
Detroit, Mich. (Detr)
J. C. Miller Company
Grand Rapids, Mich. (Gr R)
Milwaukee Plating Company
Milwaukee, Wis. (Milw)
Minneapolis-Honeywell Regulator Co.
Minneapolis, Minn. (Tw Cty)
Mitchell-Bradford Chemical Co., The
Bridgeport, Conn. (Bdpt)
Modern Plating Company
Los Angeles, Calif. (L. A.)
Modern Plating Company, The
Chicago, Ill. (Chic)
Modern Plating Corporation
Freeport, Ill. (Chic)
Moore Drop Forging Company
Springfield, Mass. (Spfd)
Motor Products Corporation
Detroit, Mich. (Detr)
Mutual Chemical Company of America
Baltimore, Md. (Bal-W)
George L. Nankervis Company
Detroit, Mich. (Detr)
National Aniline Div., Allied Chemical & Dye Corporation
New York, N. Y. (N. Y.)
National Brass Company
Grand Rapids, Mich. (Gr R)
National Cash Register Company, The
Dayton, Ohio (Dayt)
National Lock Company
Rockford, Ill. (Rock)
National Plating Company, Inc., The
Chicago, Ill. (Chic)
National Screw and Manufacturing Co.
Cleveland, Ohio (Clev)
Nelson Chemicals Corporation
Detroit, Mich. (Detr)
New England Plating Company, Inc. (2)
Worcester, Mass. (Hart)
New Jersey Zinc Company (3)
Palmerton, Pa.
George E. Nichols Plating
Los Angeles, Calif. (L. A.)
G. J. Nikolas & Company, Inc.
Bellwood, Ill. (Chic)
Northwest Chemical Company
Detroit, Mich. (Detr)
Northwestern Plating Works
Chicago, Ill. (Chic)

Oakite Products, Inc. (2)
New York, N. Y. (N. Y.)
Oneida, Ltd.
Oneida, N. Y. (Syr)

F. D. Pace Company
Grand Rapids, Mich. (Gr R)
Packard Motor Car Company
Detroit, Mich. (Detr)
Palumbo Brothers, Inc.
Newark, N. J. (Nwk)
Parker Rust Proof Company
Detroit, Mich. (Detr)
Pennsylvania Salt Mfg. Co., The
Philadelphia, Pa. (Phil)
Perma-Line Rubber Products Corp.
Chicago, Ill. (Chic)
Pheoll Manufacturing Company
Chicago, Ill. (Chic)
Philadelphia Rust-Proof Company
Philadelphia, Pa. (Phil)
Philco Corporation
Philadelphia, Pa. (Phil)
Platers Supply Company
Cleveland, Ohio (Clev)
Platers Technical Service, Inc.
Chicago, Ill. (Chic)
Plating Institute of Michigan, The
Detroit, Mich. (Detr)
Plating Service Company
Chicago, Ill. (Chic)
Precision Castings Company, Inc.
Kalamazoo, Mich.
Price-Pfister Brass Manufacturing Co.
Los Angeles, Calif. (L. A.)
Products Finishing
Cincinnati, Ohio (Cinc)
Promat Division Poor & Company
Waukegan, Ill. (Chic)

R. C. A. Victor Div. Radio Corp. of America
Camden, N. J. (Phil)
Reed Plating Company
Detroit, Mich. (Detr)
Regent Metal Products, Inc.
Brooklyn 11, N. Y. (N. Y.)
Reilly Plating Company
Milvindale, Mich.
R. W. Renton & Company
Cleveland, Ohio (Clev)
Reynolds-Robson Supply Company (2)
Philadelphia, Pa. (Phil)
Richardson-Allen Corporation
College Point, L. I., N. Y. (Chic)
Roberts Rouge Company
Stratford, Conn. (Bdpt)
G. S. Robins & Company
St. Louis, Mo. (St. L.)
Roth Plating Corporation
South Bend, Ind. (St Jo)
Roto-Finish Company
Kalamazoo, Mich.
Royal Plating & Polishing Company, Inc.
Newark, N. J. (Nwk)

Sargent & Company
New Haven, Conn. (N. H.)
Scientific Control Laboratories
Chicago, Ill. (Chic)
Scovill Manufacturing Company
Waterbury, Conn. (Wtby)
J. P. Seeburg Corporation
Chicago, Ill. (Chic)
E. E. Seeley Company, Inc.
Bridgeport, Conn. (Bdpt)
Sel-Rex Precious Metals, Inc.
Belleville, N. J. (Nwk)
Seymour Mfg. Company
Seymour, Conn. (Wtby)
J. J. Siefen Company
Detroit, Mich. (Detr)
Siegel Robert Plating Company
St. Louis, Mo. (St. L.)
Solventol Chemical Products, Inc.,
Detroit, Mich. (Detr)
Sommers Brothers Mfg. Company
St. Louis, Mo. (St. L.)
Sparkler Manufacturing Company
Mundelein, Ill. (Chic)
C. D. Sparling Co.
Detroit, Mich. (Detr)
Spence Electro Plating Company
Los Angeles, Calif. (L. A.)
Standard Plating Rack Company
Chicago, Ill. (Chic)
Standard Plating Works
Goshen, Ind.
Standard Steel Spring Division (3)
Rockwell Spring and Axle Co.
Coraopolis, Pa.
Stanley Works, The
New Britain, Conn. (Hart)
Star Chromium Corporation
Long Island City, N. Y. (N. Y.)
Stevens, Frederic B., Inc. (2)
Detroit, Mich. (Detr)
Studebaker Corporation, The
So. Bend, Ind. (St Jo)
George A. Stutz Manufacturing Company
Chicago, Ill. (Chic)
Sunbeam Corporation
Chicago, Ill. (Chic)
Superior Steel Company
Detroit, Mich. (Detr)
Surface Alloys, Inc.
Los Angeles, Calif. (L. A.)
Sylvania Electric Products, Inc.
Bayside, N. Y. (N. Y.)

Talon, Inc.
Meadville, Pa. (Clev)
Ther Electric & Machine Works
Chicago, Ill. (Chic)
Thomas Strip Div., Pittsburgh Steel Co.
Warren, Ohio (Clev)
Triple A Plating Company
Chicago, Ill. (Chic)
Udylite Corporation, The (3)
Detroit, Mich. (Detr)
United-Carr Fastener Corporation
Cambridge, Mass. (Bost)
United Chromium, Inc. (2)
New York, N. Y. (Detr & N. Y.)
United Manufacturing Company
Chicago, Ill. (Chic)
United Platers, Inc.
Detroit, Mich. (Detr)
United States Spring & Bumper Company
Los Angeles, Calif. (L. A.)

Van Der Horst Corporation of America
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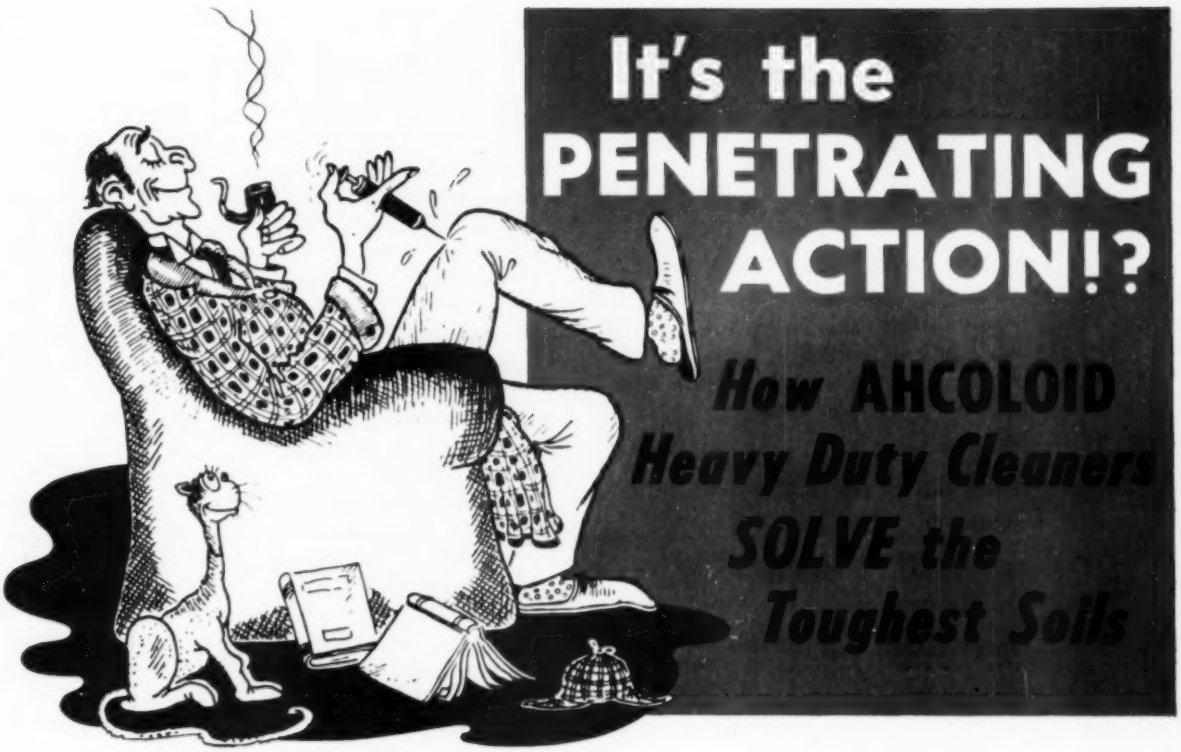

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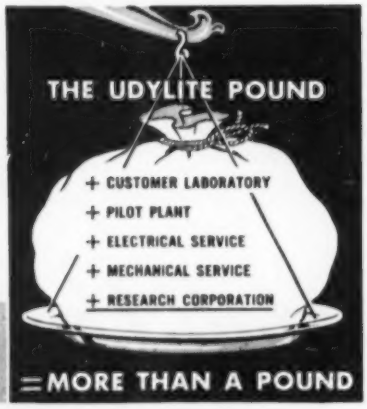

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Book Review

DR. HAROLD J. READ
Professor of Metallurgy, The Pennsylvania State University

MATERIALS AND PROCESSES by James F. Young, 2nd edition, 1954, xiv + 1074 pages. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. Price, $8.50.

The appallingly difficult task of summarizing present knowledge relating to materials and processes of interest to engineers and industrial designers has been tackled by a number of authors, but it is doubtful if any of them has been more successful than Mr. Young. He has certainly been encyclopedic in his selection of material, and save for one or two exceptions, he has maintained a nice balance in the degree of detail presented for each subject. A notable exception is the exceedingly long chapter on the electrical and magnetic properties of metals.

It is probable that every user of this book who is an expert in one of the subjects discussed therein will be disappointed by the brevity of the treatment of his specialty. Dispassionate evaluation reveals, however, that a surprising amount of detail is included in the material devoted to each subject field, in spite of the brevity. The same reader may be annoyed also by the minor errors or misstatements which, to his expert and critical eye, will be readily apparent. Some of these may be caused by the need for brevity, but in a few instances noted by the reviewer, lack of precision or error of fact cannot be blamed upon the need for concise expression. On the whole, however, such errors as were noted are minor and not very disturbing, e. g., perhaps it is a quibble to point out that OFHC copper is melted and cast in a strongly reducing atmosphere, not in an inert gas; or that the product of electrolytic copper refining is *not* commonly spongy copper. The expert should remember that the only parts of the book meant for him are those which treat of subject fields where he has little or no knowledge and desires a quick review of the salient features in that field.

It is unlikely that a book of this sort is ever likely to be read from cover to cover, except possibly as a text in a formal course. Logical organization and a complete subject index are required, therefore, to to make it a useful volume. The author has met both of these criteria successfully.

Although all sorts of materials, both metallic and nonmetallic are discussed in the first half of the book, the section on processes is limited almost entirely to the working, finishing and testing of metallic materials. To cite a specific instance, several pages are devoted to the properties of wood as a material, but nothing in the process section pertains to the working or finishing of wooden workpieces. Perhaps such material was omitted by intention to permit more detailed treatment of metal-working processes.

QUESTION BOX

The following series of questions and answers, submitted by EUGENE ROTH, Secretary-Treasurer of the St. Joseph Valley Branch, were taken from a panel discussion at a recent meeting of that branch. The answers to the questions were provided by a panel of experts composed as follows: JOE HAVILAND, FRANK SAVAGE, HAROLD WIESNER, and DUKE WYSONG as moderator.

Q. What is the comparison of adhesion between copper strike or nickel strike on steel?

A. (By Panel) On clean steel, copper is not necessary; on impure steel, copper strike will help.

Q. What are the advantages of high-chloride nickel strike?

A. (By Panel) It may give somewhat better coverage in low-current density areas, such as recesses; otherwise, there is no outstanding advantage, and it does make the plating problem more complex.

Q. What troubles are likely to occur in chromium plating 430 stainless steel?

A. (By Panel) There is no unusual plating problem. The main difficulty may be that the stainless steel may not be of uniform composition which will require polishing and buffing before plating. Chromium will be only as good as the quality of the finish over which you plate.

Q. We nickel plated very close mesh monel metal screens and found nickel peeling when the screen was rolled under pressure. What precautions can we take?

A. (By Panel) The cause of the trouble most likely is internal stress in the nickel deposit. The remedy may be heating after plating either in an oven or by a long soak in hot water.

Q. Does the panel know what the "Morley Process" of hard chromium plating is?

A. (By Panel) No one present has heard of this process name.

Q. Has the panel heard of a process specification for nonreflective chromium plating for Army-Navy jobs?

A. (By Panel) No written specifications are known offhand, but cold plating or a different type chromium bath may give the dull results that are desired.

Q. Does a coating of 0.0002 inch copper plus 0.0005 inch nickel give a completely rust resistant coverage on steel washing machine parts?

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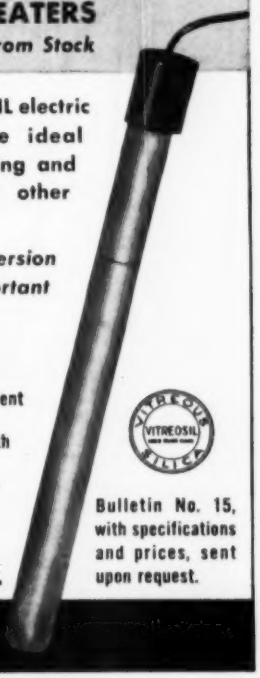

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A. (By Panel) Depends a great deal on the steel. Ordinarily, the plating thickness for this purpose would be a minimum of 0.001 inch. Also, copper is being considered less and less for corrosion resistance while a nickel deposit, without copper, direct on good grade steel will give as good or better corrosion resistance.

Q. We have a "fish-scale" pitting on 0.040 inch thick hard chromium plated shafts in the high-current density area. What causes this?

A. (By Panel) Most likely low sulfate.

Q. We used a portable barrel to cadmium plate steel screws and instead of their being plated with cadmium we found a severe etching of screws to a degree where it reduced the screw dimensions. Polarity was right and the following barrel plated work was fine.

A. (By Panel) Silence. (Brother you have something there.)

Q. We have a blackening job to do on cadmium plated parts, and we are using a proprietary dip but can't get uniform black.

A. (By Panel) A muriatic acid dip before blackening may help. Heating the black dip above operating temperature and then cooling it may help restore the blackening dip quality; preheating the work to operating temperature of the bath may make color more uniform.

Q. We have zincdie castings which show streaks after a copper strike; streaks do not show up when plated in regular copper plating tank.

A (By Panel) If it looks like glove marks, a change of polishing compound may help—or use lime on polisher's gloves, or alcohol to wipe pieces; or, if it is plating trouble, correct the copper strike solution. Actually, not enough facts are known to make any definite recommendations.

Q. How is hard-chromium plating done on aluminum?

A. (By Panel) Two ways—for light-work requirements of parts, use sand blast on aluminum, then plate—this will give fair chromium adhesion. For severe requirements, use zincate process recommended by Aluminum Co. of America with single, double, or even triple zincate cycles to get best adhesion.

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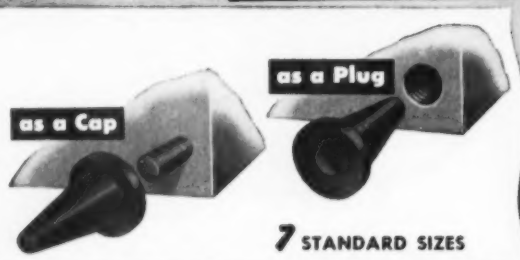

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Article Abstracts

No copies of articles are available at the offices of "Plating". Photostats may be had from libraries having files of the journal in question and offering photostat service, usually at 30-50 cents a page. Ask your public library to consult the Union List for names of libraries having the particular journal. Abbreviations used are those of Chemical Abstracts.

Hard-Chromium Plating of Aluminum. José Rahola de Espona. Spanish Patent 200,918 (Jan. 4, 1952). C. A. **48**, 1863 (Feb. 25, 1954).

The aluminum is degreased in hot Na_2CO_3 or NaOH, washed, immersed in a HNO_3–HF mixture, washed, immersed in a solution containing $ZnSO_4$ (600–900 grams per liter) and HF (20–50 cubic centimeters per liter), washed, immersed in a 10–50 per cent HNO_3 solution to partly remove the zincate coating, washed, and chromium plated in a CrO_3–H_2SO_4 bath (100:1). The aluminum or its alloy may be shot peened with coarse-grained abrasive material after alkaline degreasing and washing.

Performance of Electrical Joints Utilizing New Silver Coating on Aluminum Conductors. T. J. Connor and W. R. Wilson, Pwr. Apparatus Syst. No. 7, 702–712 (Aug. 1953). Elec. Eng. Abstrs. **57**, 20 (Jan. 1954).

A new process of silver plating of aluminum is described for elimination of joint failures which might be due to high-resistance alumina film. The advantage of silver is that its contact resistance, if raised by filming, characteristically decreases in value during normal operation, and a curve is included showing self-cleansing properties of sulfide silver contacts at load currents. Whereas many joints are between copper and aluminum, addition of silver plate does not introduce a new corrosion problem but shifts corrosion away. Data are given for 144 joint treatments. Tables of endurance tests under high-humidity and also under salt-spray conditions, indicate highly stable performance. The

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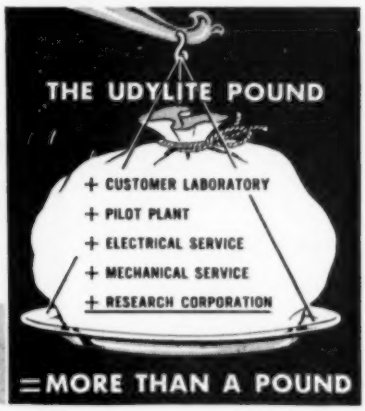

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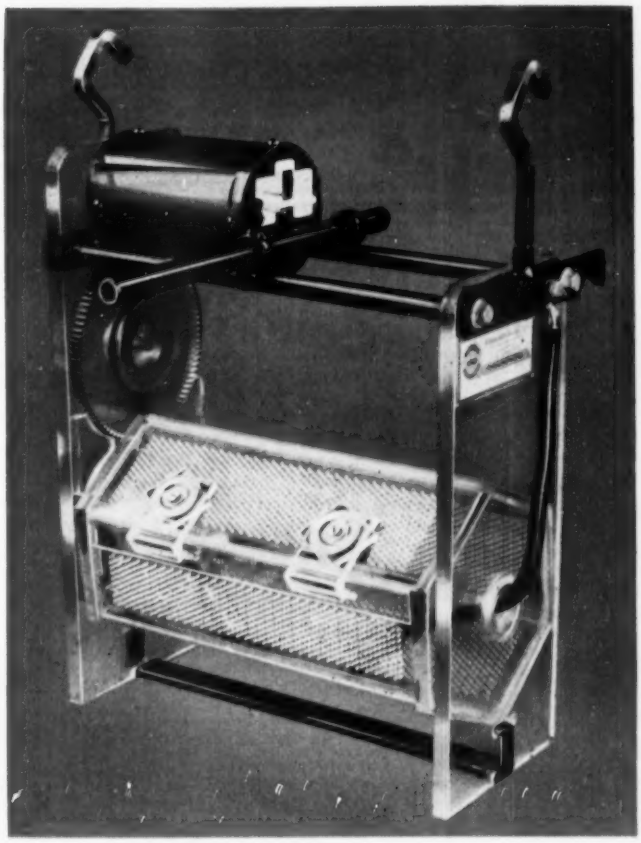

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Article Abstracts

bond between the silver and aluminum is stronger than either metal. On high-current tests, the silver-aluminum joints remain undamaged and on a 6-month cyclic run no silver plated aluminum joint increased its contact resistance. A lengthy discussion is reported. The investigation does not include aluminum cables and connectors.

Polishing of Aluminum Mirrors. Kimiro Hayasaka. Japanese Patent 1254 (Mar. 26, 1953). C. A. **48**, 1863 (Feb. 25, 1954).

A mirror of 99.9 per cent aluminum is made the anode in an electrolyte containing equal volumes of 96 per cent AcOH and H_3PO_4 (density 1.840). The solution is electrolyzed at 50–80°, 1–2 volts, and 3–6 ampere per square decimeter for 5–15 minutes to give a mirror surface with 90 per cent reflection.

Filming and Aluminizing Process for Cathode Ray Tubes.* Channing Dichter and Vanja Srepel.

The various techniques that can be used to film cathode ray tubes are discussed. Common defects and their cures are outlined. Physical parameters involved in introducing a thin layer of aluminum between the electron gun and the phosphor screen are analyzed. The effect of aluminizing on spot-size contrast, light output, effective tube life, gas ratio, etc., is reviewed.

Room-Temperature Ductile Chromium.* H. Johansen and G. Asai.

The historical development of the effort to find room-temperature ductile chromium is reviewed. Preparation and properties of room-temperature ductile chromium are described. Reasons for the ductility, or lack of it, are advanced on the basis of experiments showing the effect of certain impurities, mechanical work, and heat-treatment. Present and possible future uses of ductile chromium are discussed.

*Presented at Electrochemical Society meeting at Chicago, May, 1954.

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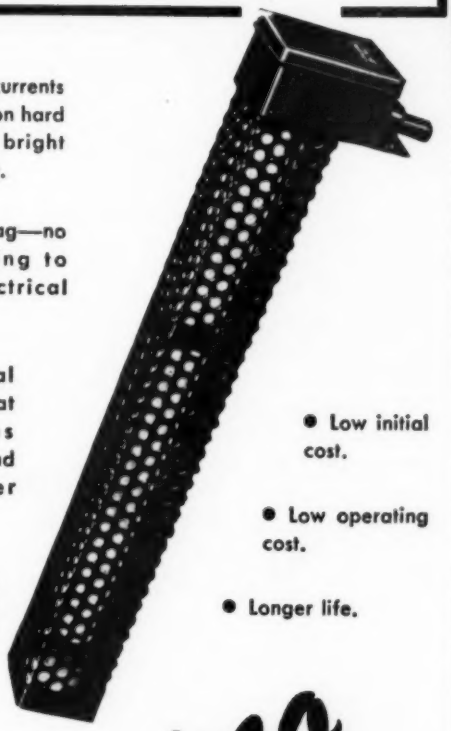

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22 important new products for metal cleaning and finishing

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ESTOX FLOORMASK—Protective coating for floors around spray booths; facilitates rapid cleanup.

SOLUBLE OIL CLARIFIER—This product controls rancidity in soluble oils for various machining operations.

ZRC-8—A zinc reverse current cleaner. Four oz. per gallon, reverse current, 5–6 volts, 20–30 amps. per square foot—160° F. to 165° F.

JSC-8—A general purpose plater's cleaner for steel, iron, brass, bronze and zinc. Designed for the job shop. 4–6 oz. per gallon, direct current followed by flash reverse—5–6 volts, 30–50 amps. per square foot.

CS-8—Chrome stripper; aqueous solution—4 oz. per gallon, reverse current at 6 volts, room temperature. Strips chromium without damage to base metal.

HDS-8—Heavy duty soak cleaner; 5–8 oz. per gallon, 180° to boiling; rapid cleaning, long life, excellent emulsification.

HDA-7—A combination emulsifier and wetter used to fortify HDS-8 for a particularly tough job or where contamination runs extremely high. Add 1 oz. to each gallon HDS-8 solution.

HOT STRIP-8—Heavy duty paint strip designed to remove synthetics and baked enamels rapidly.

RPC-7—Water displacing rust protective coating.

SR-6—Scale remover designed for rapid removal of scale and rust; operates at room temperature.

RCH-8—A reverse current heavy duty cleaner and smut remover; 8 oz. per gallon, 180° F. to 200° F., reverse current, 6–7 volts, 75 to 100 amperes per square foot.

DEFLOCCULATOR-8—Paint deflocculator—non-foaming. Concentration ⅛ to ¼ oz. per gallon.

PC-6—Rust remover and phosphate coating; may be used in concentrated form or reduced with water to a 25% solution. Increase in concentration or in temperature (up to 140° F. to 150° F.) increases speed of reaction.

MG-6—Replacement for hydrofluoric acid in Dow 7 process.

ESTOX FLUX 100—For welding of cast iron.

ESTOX FLUX 200—For brazing of stainless steel.

HOLDENFLUX—An ideal paste silver brazing flux for brazing that is easy on the hands.

DA-6—Electroplaters acid in efficient dry form to replace either muriatic or sulphuric acid.

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Patent Abstracts

DR. D. GARDNER FOULKE
Manager, Electrochemical Development
Hanson-Van Winkle-Munning Co.
Matawan, New Jersey

Copies of patents may be obtained by writing to Commissioner of Patents, Washington, D. C. Price 25 cents each.

No. 2,658,839, November 10, 1953—Process of Chemical Nickel Plating—P. Talmey and William S. Crehan, assignors to General American Transportation Co., Chicago, Ill.

An improved method is claimed for utilizing electroless nickel plating baths, whereby it is possible to maintain substantially constant the relative and optimum concentrations of reagents in the bath. The process consists of storing the bulk of the solution, below the boiling point, in a reservoir, holding a small portion of the solution slightly below the boiling point thereof in a plating chamber, circulating and cooling the solution at a slow rate from the upper portion of the plating chamber to the reservoir, to the lower portion of the plating tank. Plating of nickel on iron, cobalt, nickel, aluminum, copper, silver, gold, palladium and platinum is done from an aqueous solution of a nickel salt and a hypophosphite.

11 claims, 1 figure.

No. 2,658,841, November 10, 1953—Process of Chemical Nickel—Plating and Bath Therefore—Gregoire Gutzeit and Abraham Krieg, assignors to General American Transportation Co., Chicago, Ill.

A process is claimed for chemically plating copper, silver, gold, aluminum, iron, cobalt, nickel, palladium and platinum (catalytic metals) with nickel using an aqueous solution of a nickel salt and a hypophosphite.

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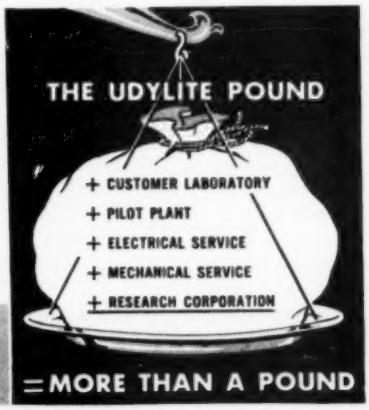
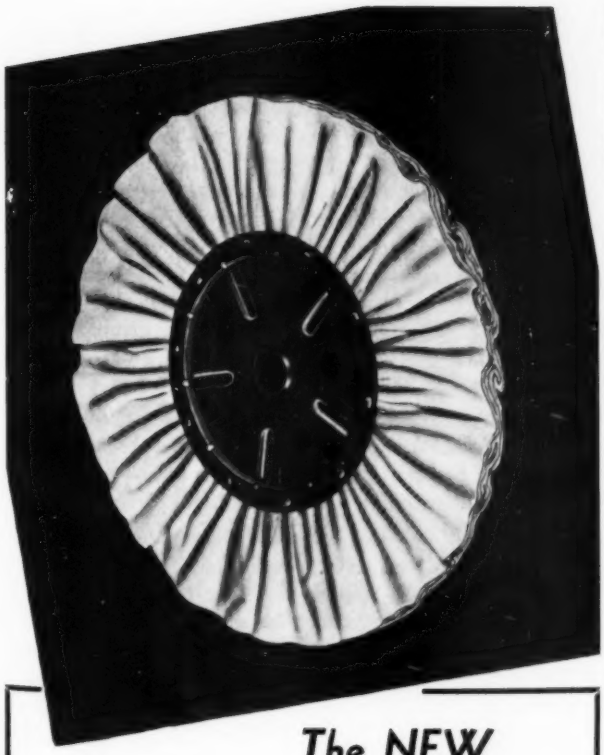


USE READER SERVICE CARD; INDICATE A 701.
USE READER SERVICE CARD; INDICATE A 702.



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Patent Abstracts

The ratio of nickel ions to hypophosphite ions is maintained within the range 0.25–0.60, expressed in molar concentrations and the absolute hypophosphite concentration is 0.15–0.35 mole/liter. The initial *p*H is approximately 4.5–5.6. A salt of an organic acid, acetic specifically claimed, is employed as a buffer to the extent of two carboxyl groups for every nickel ion that can be deposited. Thirteen figures relating rate of deposition to temperature, nickel/hypophosphite ratio, hypophosphite concentration and *p*H are given.

12 claims.

No. 2,658,842, November 10, 1953—A Process for Chemical Nickel Plating and Bath Therefore—Gregoire Gutzeit and Ernest J. Ramirez, assignors to General American Transportation Co., Chicago, Ill.

A process is claimed for chemically depositing nickel on catalytic metals using a nickel bath containing hypophosphite and a buffer consisting of the salts of a simple short chain saturated aliphatic dicarboxylic acid, 3–6 carbon atoms (e.g. malonic, succinic, glutaric and adipic acids). The nickel/hypophosphite molar ratio is given as 0.25–1.60 and the hypophosphite concentration as 0.15–1.20 moles/liter.

19 claims, 6 figures.

No. 2,664,392, December 29, 1953—Nickel Plating—Newell F. Blackburn, assignor to the Pennsylvania Salt Mfg., Co., Philadelphia, Pa.

A method for plating bright, ductile nickel deposits from the nickel fluoborate bath to which has been added small quantities of sulfurized quinoidine (prepared according to Lutz U. S. No. 1,908,773 of May 16, 1933) and benzoic sulfimide. Example 2 of three examples is as follows:

$Ni(BF_4)_2$	200 g/l
H_3BO_3	30 g/l
Benzoic sulfimide	2 g/l
Sulfurized quinoidine	0.05 g/gal
*p*H	3.5

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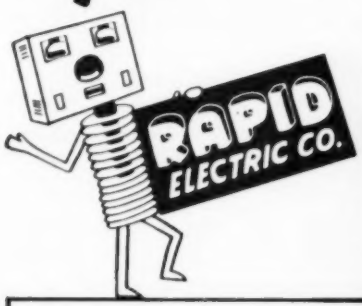
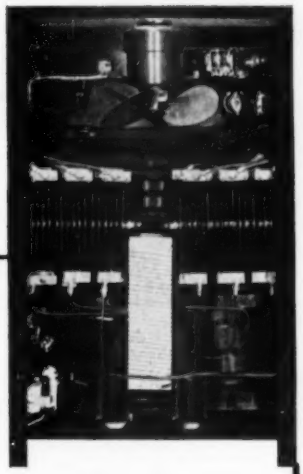
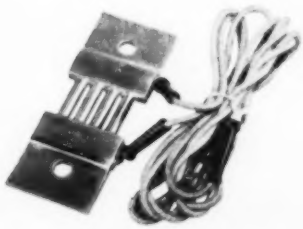




Bench Model Rapid Rectifier



Rapid Ammeter Shunt with calibrated leads.

Standard Rapid Plating Rectifier

The saturable reactor and magnetic amplifier principle has been applied to rectifiers used in the plating industry for some years. Now, after years of research, Rapid Electric Company offers the applied principle of magnetic amplifiers for attaining automatic voltage stabilization, and smooth uninterrupted voltage output control.

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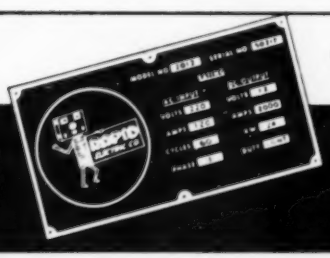

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CA 6-3956-7 New York 12, N. Y.

Patent Abstracts

Temperature	65° C
Cathode current density up to	100 asf
Anode current density	50 asf

9 claims.

No. 2,664,393, December 29, 1953—Electrolytic Refining of Lead—Frank C. Mathers and Grover B. Lantz, assignors to U. S. Refining and Mining Co., Portland, Maine.

Dense, smooth lead deposits, free of trees, etc., it is claimed are obtained by the addition of 0.5 to 5.0 lb of goulac and 0.06–6.0 lb of material selected from the group consisting of water soluble portions of aloes and electrolyte—soluble portions of aloes to lead fluosilicate electrolytes.

4 claims.

No. 2,664,675, January 5, 1954—Burnishing Apparatus —Frank La Monica, assignor to The United Tool & Die Co., Elmwood, Conn.

This invention describes a flexible, oval-shaped barrel against which a number of pneumatic rolls press to form protusions upon the inside of the flexible barrel thereby compacting and deflecting the contents of the barrel.

10 claims.

No. 2,664,873, January 5, 1954—Coated Metal Product and Method of Producing Same—Robert Graham, assignor to Shell Development Co., Shell Development Co., San Francisco, Calif.

A coated engine valve of steel having as a protective coating against the products of combustion of engine fuel composed of at least 55 per cent aluminum and between 30–40 per cent nickel. The coating is formed as the result of interdiffusing an outer metal layer of aluminum with a thin intermediate layer of nickel bypassing an electric current through at 600° C.

20 claims.

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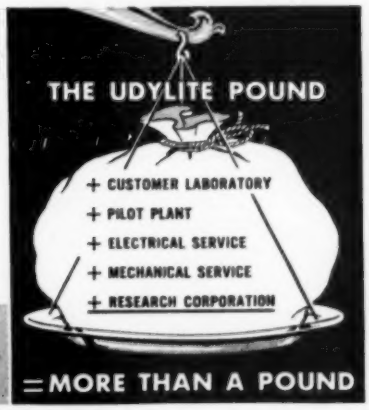

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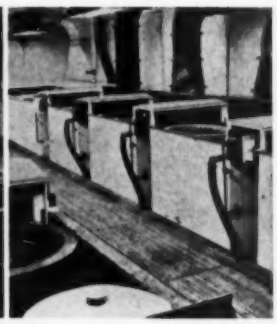
BEFORE—*Stainless steel chemical installation after 14 months' service handling corrosive acids.*



AFTER—*New unit has plenum chambers, hoods and overhead ducts built entirely of Van Dorn plastics—still resistant to 30 acids after 2 years' service.*

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CHEMICALLY RESISTANT
Non-Plasticized Polyvinyl Chloride

Tensile Strength of Aluminum, with 1/2 its weight • Readily Formed, Machined, Drawn, Molded or "Welded"

For plating and metal finishing, Van-Cor is fabricated into tanks, tank liners, plating racks, ducts, piping, etc. Available forms include: SHEETS—$\frac{1}{32}$" through 1"; PIPE—$\frac{1}{2}$" through 6" diameter (10 ft. lengths); ROUND BARS—$\frac{1}{4}$" through 2" diameter (10 ft. lengths); WELDING ROD—$\frac{1}{8}$" and $\frac{3}{16}$" diameter.

Typical Van-Cor pipes and fittings fabricated to specifications by Van Dorn.

WRITE FOR ILLUSTRATED BULLETIN AND SPECIFICATIONS

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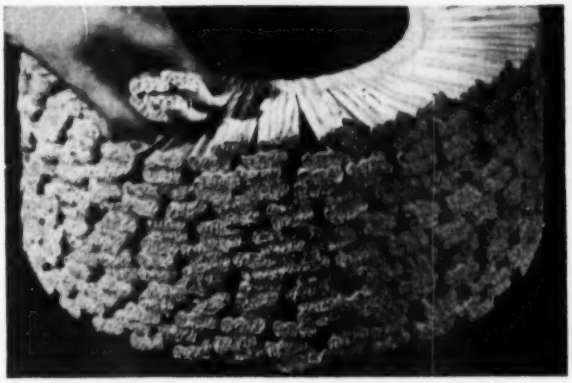
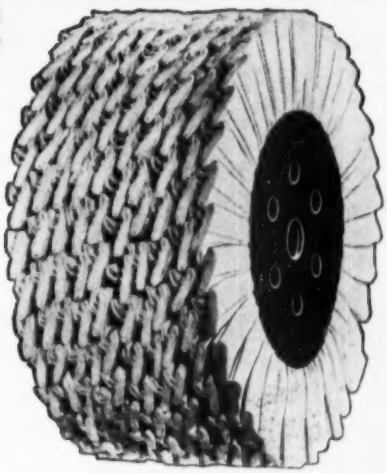


TYPE 20-RD SISAL BUFF



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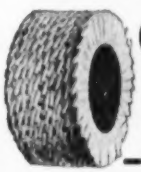

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AES News

Dr. Swift Elected to "Who's Who"

Dr. George P. Swift, National AES President, was informed this month of his election to "Who's Who in Commerce and Industry." This becomes President Swift's 6th honor in "Who's Who" publications.

He is also a member of "Who's Who in Engineering," "Who's Who in the East," "Who's Who in New England," "Who Knows and What," and "American Men of Science."

President Swift, a recognized authority in the field of electrochemistry and spectrochemistry, formerly taught at MIT for 20 years. He operates his own electrochemical and spectrochemical laboratories in Watertown, Mass.

Other AES dignitaries who have received the coveted listing in "Who's Who in Commerce and Industry," include Past President Cleve Nixon of General Motors Corporation; Dr. A. K. Graham, former AES Executive Secretary and of Graham, Crowley & Associates, Inc.; and Al Korbelak, Editor of PLATING.

Swift

AES Third Vice-Presidency Candidate

The Waterbury Branch of the Society . . . and backed by many outside this particular branch . . . is proposing Francis T. Eddy, of Chase Brass and Copper Company, for the 3rd vice-presidency of the Society.

Eddy

According to a series of proposed letters sent to the various members and delegates of the Society, Eddy would bring to the important duties a number of values. Included in his administrative services are these:

(a) . . . He has just completed his term as president of Waterbury Branch.

(b) . . . He is serving as chairman of the National Paper Awards Committee.

(c) . . . He has served as general chairman of the New England Regional Meeting.

Eddy has had about 16 years' experience in research, production and administrative work, all in connection with the plating and finishing of metals. He recently has delivered a paper before several branches on "Plating Room Organization" . . . a subject with which he is thoroughly familiar as the result of his nine years' service with Chase Brass and Copper Company. At the New York Convention, he will act as chairman for one of the technical sessions.

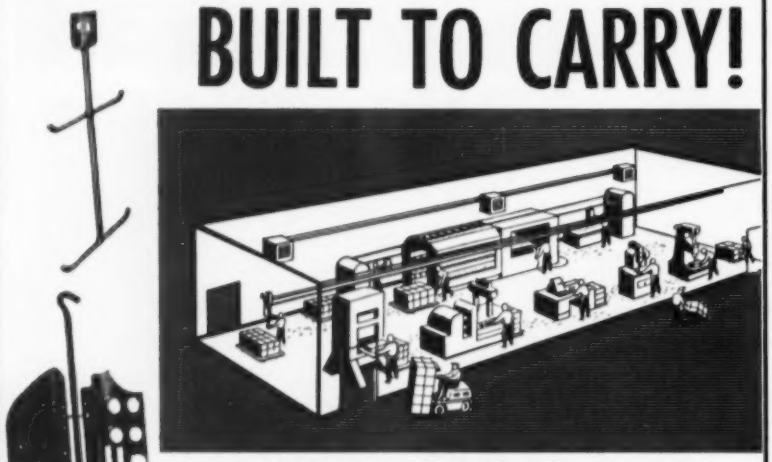
1953-1954 Membership Campaign Winners

Los Angeles, Syracuse and Western Ontario have copped branch membership honors in their respective divisions in the 1953–1954 fiscal year just ended. This announcement was made recently by the National Office.

Second Vice-President Clyde Kelly, National Membership Chairman, in a letter to winning branches, praised their efforts and announced that an award of $50 will be presented to each at the forthcoming convention in New York City.

"These membership accomplishments don't 'just happen'," said Kelly. "It takes work on the part of branch members. These winners for 1953–1954 are to be commended for their splendid performance. We hope that other branches will emulate their record."

BUILT TO CARRY!



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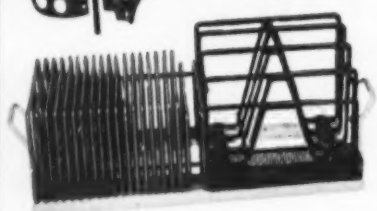
Ready to use NARACO materials handling fixtures do away with time consuming labor. Engineered to any specific requirement, these racks are designed to carry the most intricate objects. Manufactured of welded steel construction NARACO racks and fixtures are always strong and dependable.



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100% solid PLASTISOL insulation means fewer rejects and reworked parts . . . prevents damage and corrosion. NARACO will also insulate any of your uncoated conveyor baskets, racks or fixtures.

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POTASSIUM CYANIDE, 35-40%
widely employed in high speed copper electroplating on steel when copper is used as a base coat for nickel and chromium. Forms soluble complexes with copper, silver, gold, cadmium, zinc, and other metals of the general form $K_2M(CN)_4$.

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useful in cyanide plating, particularly in gold, silver, zinc and cadmium plating to remove the troublesome effect of carbonates and sulfates in the bath. Increases the cyanide content of the bath without adding extraneous materials.

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Branch News

ALLENTOWN-READING BRANCH

A regular meeting was held on April 21 at Scotty's Anchorage, Emmaus, Pa., with a dinner that started at 7:00 P. M.

At this meeting, the branch membership heard an excellent speaker on a very pertinent subject. WARREN WISWESSER of Wilson Products, Inc., spoke on "Hazards in the Plating Department," a "must" subject for all electroplaters.

W. E. WALTER, JR., *Librarian*

BALTIMORE-WASHINGTON BRANCH

The nominations committee for the branch presented the following for 1954-1955 officers:

President—ASAF A. BENDERLY
Vice-President—WILLIAM METZGER, JR.
Treasurer—TILLMAN GRESSITT
Secretary—CARL H. THIEDE
Librarian—JUELS HORELICK

The following were elected to membership at the last meeting: DANTE G. BERETTA, SAMUEL P. GRANT, WALTER E. REID, JR., CHARLES C. SWEGLER, and EDWARD J. WALLACE.

The following applications for membership have been approved by the Board of Managers: SAMUEL D. D'ALFANZO and EDWARD C. BERTUCIO.

CARL H. THIEDE, *Secretary*

BOSTON BRANCH

Soap-box oratory at Boston Common on May 1 was well-drowned out by another assemblage in the shadows of the Common that day. It was the occasion of the 18th Annual Technical Meeting and Banquet of the Boston Branch at the Hotel Statler.

More than 100 attended the afternoon technical session while close to 500 were on hand at the Imperial Ball Room for the Annual Banquet.

Mrs. Ann Baker Love, Chairman of Ladies' Entertainment, discusses Boston Annual Meeting program with Manson Glover (left), Chairman of the Educational Session and Entertainment, and Myer Shapiro, Boston Branch President

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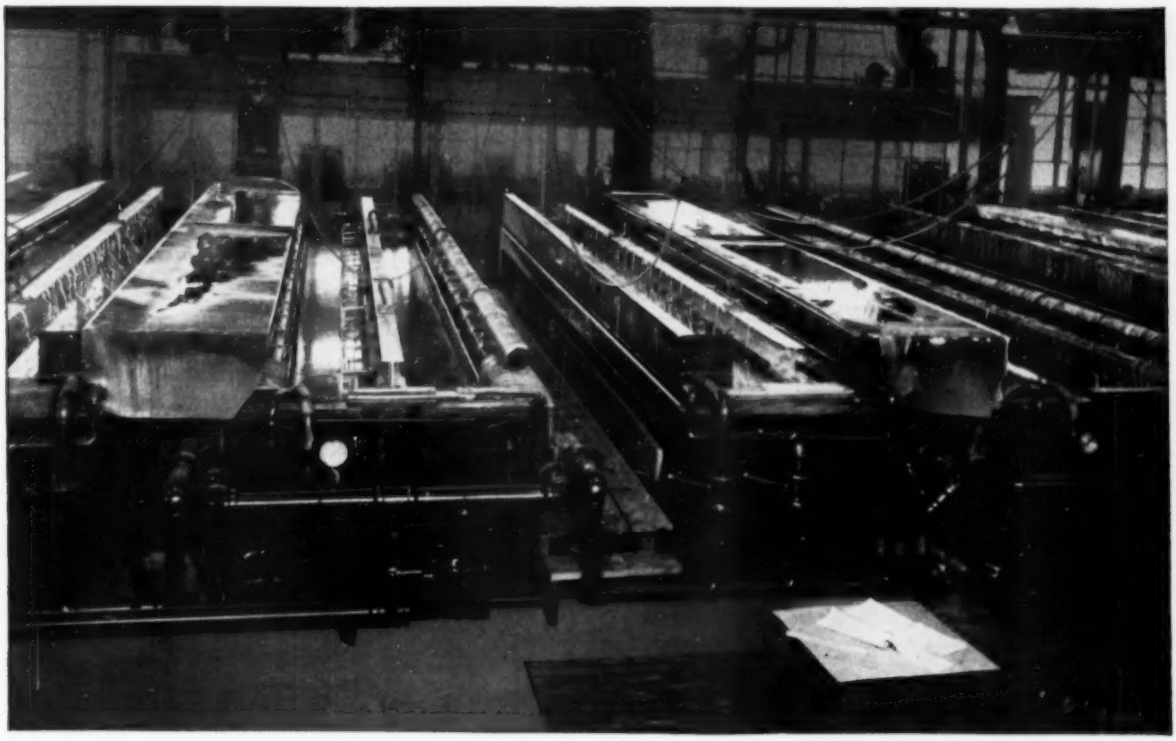

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Branch News

A technical session featured the following speakers and topics: BRUCE E. WARNER, President-Treasurer, New England Plating Works—"Management Problems of the Metal Finishing Shop"; FRANK J. KALAFUS and WALTER ROTZAL, Secretary, Contract Plating Co.—"Job Shop Pricing"; and ROY A. HEOUGH, JR., Chief Engineer, Mercil Plating Equipment Co. —"Plating Barrels, Construction and Use."

Ladies were guests at the Schubert Theater where they saw the stage show, "The Pajama Game."

The Banquet proved to be one of the best ever. A full-course dinner, dancing with Karl Rohde's Orchestra and several acts featured the evening affair. MRS. PETER KOVATIS, wife of the National Executive Secretary, was introduced and drew the many lucky numbers to a large array of handsome gifts donated by generous concerns and individuals.

DR. HAROLD A. NARCUS, Chairman of the Annual Meeting, commended the entire committee "for a most successful affair." His committee included: MANSON GLOVER, Education and Entertainment; LOUIS J. LOVE, Fianance; ARTHUR W. COLLINS, Program and Publicity; CALVIN E. A. SOLLA, Hotel; KEN. L. DAVIDSON, RUDOLPH A. HELGESON, Table Reservations; DR. GEORGE P. SWIFT, JAMES H. ANDERSON, Tickets and Registration; LOUIS V. GAGNON, Prizes; MYER SHAPIRO, Good Will and Hospitality; and MRS. ANN BAKER LOVE, Ladies.

GEORGE P. SWIFT, *Secretary*

Boston Annual Meeting Chairman, Harold Narcus (extreme left), goes over seating arrangements with his committee. Left to right: Narcus, Rudy Helgeson, James Anderson, National President George P. Swift, Ed Jevely, Steve Baker, Norman Peterson; seated, Ken Davidson

BUFFALO BRANCH

At the meeting held on April 2, a summer picnic was planned for Saturday, August 14. Also, an educational session and dance was planned for Saturday, October 2.

Three new members were introduced: JOHN R. BOYLAN, RICHARD D. TAYLOR, and J. L. MARTIN.

The evening's program consisted of two movies: "Miracles in Painting"—a story of the development and use of electrostatic painting produced by the Ransburg Electrocoating Corp.; and "The du Pont Story"—a resume of the history of E. I. duPont de Nemours & Co.

ERIC G. SAMPSON, JR., *Secretary*

CHICAGO BRANCH

On April 9, about 100 members and their ladies gathered at the Fireside Restaurant for the Annual Ladies' Night meeting. Outstanding features of the meeting were: an excellent dinner, installation of officers for the coming year, a movie and door prizes and favors for the ladies.

After dinner, the regular branch business was transacted. The chief activity was the election of the following new members: HARRY F. REILLY of the Belke Mfg. Co.; CARL TAMBOLI of the National Plating Co.; TONY CASTLE of The Dole Valve Co.; GEORGE W. EGGAR of Udylite Corp.; RICHARD W. LANDON of the General American Transportation Co., and RALPH E. MILLER of Lake Shore Electrotype Co.

Following the election of new members, the officers for last year gave their reports, Next, the installation of officers for the coming year took place. This function was performed ably by CLYDE KELLY.

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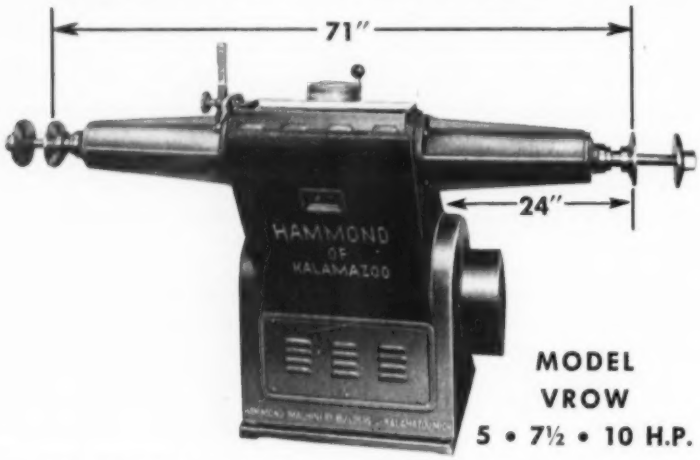

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Branch News

After the induction of officers, the group saw the movie, "Dust or Destiny."

Five lucky ladies received door prizes, each consisting of an orchid and a gift certificate. They were Mrs. R. E. Harb, Mrs. R. Walworth, Mrs. Elsie Curry, Mrs. E. Wahlen, and Mrs. Josephine Petrosius. Drawing for the prizes was done by Mrs. Longfield and Mrs. Gilbertson.

The branch extends its special thanks to Miss Eileen Drews of The Western Electric Company, who handled the ladies' activities for the evening so well.

Jerome Kuderna,
Publicity Chairman

DALLAS-FORT WORTH BRANCH

A regular meeting was held at the Lennox Hotel in Grand Prairie, Texas on March 17, branch election night.

The following slate of officers was presented and accepted unanimously for the coming year:

President—R. E. Miller
1st Vice-President—Kirt Kirsten
2nd Vice-President—Swenney White
Secretary-Treasurer—A. C. Fricke
Librarian—R. H. Heppel
Board of Managers—F. E. Lane, M. Zeto

Delegates were elected for the New York Convention. Speaker for the evening was F. J. DeWitt, vice-president of Parker Rustproof Co., Detroit, Mich. His subject was "Rustproofing Costs."

The April 21 meeting was held at the Grand Prairie Hotel. R. E. Miller presided and introduced a visitor, W. S. Gustofson of Turco Products Co. Three new members were taken into the branch. They were: Carl D. Freed and D. L. Meritz, Liberty Plating Co., Dallas and Guy Graves, American Plating Co., Fort Worth.

Speaker for the evening was W. H. Prine, International Nickel Co., New York City. His subject was "Nickel Plating Applications." His subject was developed along the lines of decorative plating, industrial plating, salvage work, electroforming and electroplating on nonconductors. He gave some very useful information on solution makeup and presented slides on various nickel plating examples.

R. H. Heppel, *Librarian*

DETROIT BRANCH

The joint meeting of the Detroit Branch AES and the Plating Institute of Michigan was held on April 2 at the Hotel Statler. President L. C. Borchert opened the meeting at 8:20 P. M. with approximately 185 members and guests.

Lee Morse reported that Oakman Plating was a new sustaining member of the AES. Secretary-Treasurer R. Racine reported there are now 610 members in the branch.

Program Chairman F. E. Olmstead welcomed the members of the Plating Institute of Michigan, which is comprised of job shop platers, whose total production is over 75 per cent of that farmed out in Michigan.

Cleve Nixon, Head of the Electrochemical Dept. G-M Research, was the first guest speaker whose topic, "Plated Products on Cars," was very timely. Nixon stated that the public will get better plating when more can be ascertained from Projects 13, 14, 15, and others. Corrosion, he mentioned, is more critical during the winter and that the rear bumpers break down before front ones. Corrosion tests seemed to be about the same on copper plus nickel as compared to nickel directly. Nixon showed a number of slides showing the corrosion results found from many years of testing at G-M Research.

P. M. Bigge, Head of Research Laboratories at Chrysler, was the next guest speaker whose topic was "Corrosion of Chromium Plated Zinc Base Die Castings." Bigge pointed out that it was concluded by tests that Detroit was the most critical area in winter with the *p*H

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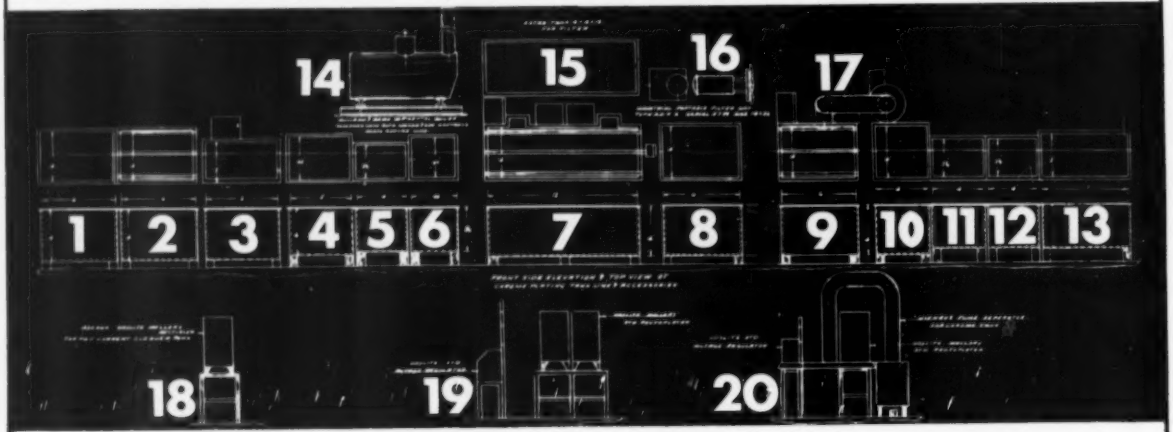

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Numerous slides were shown which indicated that a coating of 0.0012 inch total plate thickness is required to obtain the minimum expected performance on zinc base die cast exterior parts used on cars operated in the Detroit area. Of this total plate, at least half should be nickel Bigge concluded.

Joe Gurski, Quality Control Supervisor for Ford Motor, was the last guest speaker of the evening. His talk, "Quality," was in part similar to the previous speaker in that surveys made indicated that more thickness of plate increased corrosion protection.

Prior to adjournment, the new officers for the 1954–1955 period were installed. Borchert turned over his official capacity to the new branch president, Joe Gurski. Other officers installed were:

1st Vice-President—Lee Morse
2nd Vice-President—Howard McAleer
Secretary-Treasurer—Robert Racine
Educational Chairman—
Fred Olmstead
Board of Managers—Don Bigge
John Drinkwater,
Publicity Chairman

GRAND RAPIDS BRANCH

The March 12 meeting saw a fine turnout of 60 members present for another delicious meal at Finger's Restaurant.

Keith Yhouse, president, opened the business meeting with the election of two new members: Russ Pritchard and Anthony Wauczuk, both of the Di-Anodic Finishing Co., Grand Rapids.

Election of officers for the coming year followed. The officers:

President—Carl Green
1st Vice-President—Perry Burnham
2nd Vice-President—Ken Hampel
Treasurer—Robert Blackford
Secretary—John Dykstra
Librarian—Tom Henner
Assistant Librarian—Fred Szczepanik
Board of Managers—Jack Hanney,
Wallace Reed, Keith Yhouse

Librarian Lyman Sperry then introduced Joseph Andrus of the Chicago Branch and Chief Chemist for the Cronname Co. Andrus' review of anodizing history and fundamentals was received enthusiastically by the Branch.

The April 9 meeting was officer installation night. After the usual excellent meal at Finger's Restaurant, retiring president Keith Yhouse gave a report of the past year. Membership stood at 167 members. Then Yhouse turned the meeting over to Ptesident-Elect Carl E. Green who, in turn, presented Yhouse with the past president's pin.

Richard Watson was appointed chairman of the Research Committee. Green appointed the following delegates to the National Convention: Jack Hanney, James Badaluco, Carl Green, and as alternates: Maurice Caldwell, Donald Schantz, and Russel Rothe.

One new member, Elwood McCune of the Dexter Lock Co., was accepted.

Lyman Sperry introduced the speaker of the evening, Thomas E. Walsh, Manager of the Kent County Airport, who spoke on the true story of the King of Beaver Island under the title, "King Strang."

The evening concluded with a showing of a movie on a hunting expedition in Africa. This was shown through the courtesy of the Pfiefer Brewing Company.

B. R. Julien and Kenneth Hampel

HARTFORD BRANCH

A regular meeting was held at the Bond Hotel on March 15 with about 71 members and guests present. Preceding the meeting a movie entitled "Fair Exchange" was shown.

Guest speaker for the evening was Robert H. Tiers, Chief Chemist of the W. D. MacDermid Chemical Co., whose subject was "Metal Cleaning."

Tiers related many of his experiences while trouble shooting in the metal cleaning field. It was pointed out that present

methods of checking cleaners are inadequate and there is no satisfactory explanation of how a cleaner works. No standard soils are available to check cleaners or to run comparative tests on. Tiers showed many slides on soiled panels compared in a so-called swirl test cleaning unit which compares the amount of soil removed by various cleaners. Also another set of slides showed an apparatus which compares the life of the cleaner.

The technical chairman for the evening was EMILE BELOIN.

STANLEY PLATOZ, *Secretary*

INDIANAPOLIS BRANCH

The March 3 meeting was attended by 36 members and guests.

ROBERT VANHOUTEN, chairman of the local dinner-dance of May 15, asked for committee reports. MARSHALL WHITEHEAD reported on sustaining contributions. ROBERT BRUCK on tickets, EDWARD BRUCK on entertainment and EDNA ROHRBAUGH on favors. LOWELL FISHER will have charge of out-of-town hotel reservations at the Athletic Club.

Delegate Bruck reported on the Toronto interim meeting.

JOHN HOLLAND suggested the idea that our branch present one paper per year to PLATING. ABRAHAM MAX, president, appointed Holland as chairman of a committee to investigate this situation and report at the next meeting. The chairman is to select two other members for the committee.

The committee in charge of information on RICHARD HENNESSEY, who is in line for honorary membership, reported and presented a prospectus to the executive board.

In the absence of ROMAN BENDER, LIBRARIAN EARL MESSMORE introduced the speaker, WALTER E. POCOCK of Allied Research Products. His subject was "Chromate Conversion Coatings." He told of the process, qualities and colors of chromate finishes on zinc and cadmium plating, on aluminum and other metals such as copper, alloys of copper which include brass and bronze and on magnesium. There is work now being done on steel and silver.

EDNA ROHRABAUGH, *Secretary*

JACKSON-LANSING BRANCH

A regular meeting was held in Jackson on March 9. A southern fried chicken dinner preceded the meeting and tested the capacity of all present.

E. E. MURRAY of the Murray-Way Corp., Detroit, was the speaker of the evening and the topic was "Prefinishing of Steel Prior to Electroplating." It emphasized methods of polishing flat stock prior to forming operations. Excellent projected pictures of equipment of various types were shown and their purposes explained. Of great interest were slides that showed polished results of back-stand operations with belts from 100 to 320 grit, using new-dry, used, and used-oiled setup conditions. Other slides shown were of copper plated (periodic copper) polished steel with a variation between 5 microinch and 90 microinch polished finish. These definitely showed the need for better base metal finishing, causes of corrosion, entrapped gases, solutions, etc.

The talk was an outstanding demonstration that the best plating anywhere, regardless of procedure, cannot overcome poor base metal finishing and likewise the better the base metal finishing the more uniform will be the deposition and increased resistance to factors of corrosion.

The largest group in attendance for the year were present.

The April 13 meeting was held at the Porter Hotel, Lansing, Mich. A southern fried chicken dinner, with seconds and trimmings for all, left the group in excellent condition to conduct the annual business meeting.

Plans were finalized to participate with an exhibit at the National Convention, and after a discussion of branch business, the following officers were elected for the ensuing year:

President—FRED STUCKENBERG
1st Vice-President—ROBERT THEBAUD
2nd Vice-President—RAY CARTER
3rd Vice-President—K. HAWORTH
Secretary-Treasurer—E. J. BOSCA
Librarian—F. YOUNGS
Associate Librarian—L. REIMAN
Directors—DR. D. T. EWING, HAROLD MARSH, R. W. REDMOND, U. FORSYTH, WM. MOGLE
Publicity—RICHARD BOOS
Research—G. S. WOODRUFF

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Branch News

KANSAS CITY BRANCH

The March 25 meeting was held at Rosselli's Restaurant, Kansas City, with 19 members and 5 guests present. Dinner was at 6:30 P. M. followed by the business meeting and the election of officers to serve for one year beginning April 1.

The meeting was opened by PRESIDENT LOUIS E. BARKLEY. A discussion followed on the forthcoming stag party to be held at the Alladin Hotel, June 14. The following officers were elected to reign for the coming year:

President—JOHN V. MCCANDLISH
1st Vice-President—WARREN B. ELIOT
2nd Vice-President—ROBERT J. SWIDER
Librarian—GLENN WILSON
Treasurer—E. T. SCAHILL
Secretary—OLIN K. BOCK
Board of Managers—LOUIS E. BARKLEY, HERBERT H. CLARK, EDWARD M. MAGERS

OLIN K. BOCK, *Secretary*

LOUISVILLE BRANCH

At the March 18 meeting at Korfhage's Restaurant, 24 members and guests were present.

PRESIDENT P. H. PATE turned the meeting over to the educational chairman, STANLEY J. BEYER, who after a brief talk introduced B. H. YOUNG, of the Detrex Corp., Detroit, Mich. Young in his talk on the subject of "Application of Ultrasonic Waves to Industrial Cleaning" used a demonstration unit to prove that the parts that were difficult to clean in other solutions were thoroughly and easily cleaned with this application. Slides were shown which were narrated by the speaker.

Refreshments were served through the courtesy of the Detrex Corp., Detroit, Mich.

J. G. STERLING,
Secretary-Treasurer

MELBOURNE BRANCH

The 85th regular meeting of the branch was held at the Melbourne Technical College on April 29, and despite unfavorable weather, a good attendance of 67 members and visitors was recorded.

When compiling the year's program, it was decided to set aside one meeting for a subject not directly connected with electroplating or metal finishing, and this meeting took the form of a "Film Night."

Five films were shown during the night. The 1953 Redex 6500 Mile Reliability Trial was the first, showing the road conditions and obstacles encountered over the gruelling course which took the cars halfway round Australia. Another film on car racing at Le Mans was very entertaining. "Persian Story", a color film of the Persian Oil Industry, "The Wonder Jet," showing the development of the modern gas turbine, and "The Invisible Link," a film on the services rendered to the Community by wireless, both national and commercial also were shown.

At the conclusion of a very pleasant evening, the President thanked the "Film Subcommittee" for their efforts toward making the night a success.

ROBERT W. LENNIE, *Secretary*

MILWAUKEE BRANCH

March 5 was a red-letter day for the branch and the 175 members and guests who attended the 4th annual Blue Ribbon Meeting at the Pabst Brewery. The membership feted with beer (from Pabst, of course) and an elegant buffet luncheon made possible by donations from some of the job shop platers in the Milwaukee area. Shirley and her accordion kept everyone singing as the gemütlichkeit flowed through the dinner period. A short business meeting was called to order by PRESIDENT FRED ANDERSON. Nine applicants were accepted as members.

CLYDE KELLY, Second Vice-President of the National Society, was present and spoke highly of the Toronto interim meeting and the fine representation of the Milwaukee Branch by its delegates, L. DIVELEY and P. RITZENTHALER.

LEW GLASSNER and 6 Chicago members of CEPI visited us on this gala occasion.

The branch was informed that 2 honorary members would be installed that evening whereupon HENRY BORNITZKE presented honorary certificates to members JOHN MISZEWSKI, SR. and JOSEPH BIRBAUM for their long and faithful service to the branch.

LIBRARIAN JOHN SCHNEIDER introduced GLEN SCHWEMER as the master of ceremonies for the evening. Schwemer reminded the branch that the annual meeting is to be held at the Schroeder Hotel on April 24 and that many of the subjects regarding "Finishing for Competitive Markets" would be of great value to the entire membership.

Next on the program was a sound-color film, "Big Game Hunting and Fishing in Alaska." The scenes were filmed in Alaska by DR. VERNON D. E. SMITH of Minneapolis. At the conclusion of the film, the members had their choice of playing cards (schafskopf, of course) or just sitting and chatting, enjoying the evening.

C. PETER, *Assistant Secretary*

NEWARK BRANCH

A regular meeting was held March 19 at the Robert Treat Hotel, Newark, N. J.

Following a group dinner in the hotel dining room attended by some 30 members and their wives, and the showing of the film, "Flying with Arthur Godfrey," PRESIDENT HORROCKS called the first annual Ladies' Night meeting to order at

again
congratulations

We at Udylite are again happy to extend congratulations to the members of the American Electroplaters Society on the eve of your 1954 Convention.

As your society has grown, so has the Industry and Udylite . . . and we take this opportunity to express our gratitude for the many outstanding contributions you have made in the past, which have in no small measure helped us in our growth.

Udylite wishes you a very successful convention.

THE *Udylite* CORPORATION
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Branch News

9:30 P. M. with a welcome to the ladies.

The business meeting was brief, consisting of the report of the nominating committee, ZACHARY IRENAS, Chairman, and the election of officers for 1954–1955. The report of the nominating committee was accepted and it was moved, seconded and passed that the following be elected officers of the branch:

President—JOHN GUMM
1st Vice-President—THOMAS AUSTIN
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Librarian—CLIFFORD STRUYCK
Sergeant-at-Arms—GUSTAV BRITTRICH
Board of Managers—FRANK ENGLAND, ROBERT EHRHARDT, ROBERT HORROCKS

The newly elected officers were installed by DAVID CLARIN of the New York Branch.

Librarian Clifford Struyck introduced LOUIS DONROE, whose talk, "Helpful Hints for the Ladies," described some of the platers' supplies useful in the home (cyanide was mentioned only briefly), especially methods of cleaning silverware. At the conclusion of the talk, the speaker presented the winner of a drawing, MRS. EDWARD HACHENBERG, a lovely cigarette tray and lighter combination, courtesy of Royal Plating and Polishing Co., and Dave Clarin announced that sufficient Oakite silver cleaning sets were on hand for each lady to take one home.

PAUL A. OLDAM then entertained the members and guests with a program of legerdemain and magic—giving pleasure to all.

D. GARDNER FOULKE,
Recording Secretary

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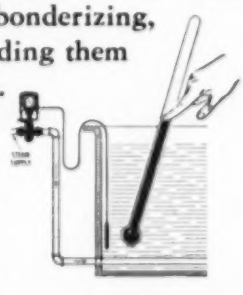

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NEW YORK BRANCH

Ladies' Night was observed as the branch held its March 26 meeting at the Hotel Statler, New York.

PRESIDENT AMATORE announced the passing of MR. LERNER; the entire branch stood in a moment of silence out of respect for his memory.

A. BRAUN then was called upon to install the officers for the coming year. Before the installation, Braun presented to the branch and their ladies, J. STREMEL, charter member of the branch; also W. Voos and F. MACSTOKER, Honorary Members. Braun then installed the following officers:

President—A. AMATORE
1st Vice-President—A. FUSCO
2nd Vice-President—D. HARTSHORN, JR.
Financial Secretary—G. COOPERMAN
Recording Secretary—L. LEVINSON
Librarian—P. VEIT
Sergeant-at-Arms—I. GOLDWASSER
Secretary-Treasurer—G. SCHORE
Board of Managers—G. HERRMANN, MARTIN MAHER, F. MACSTOKER

The meeting then was turned over to P. VEIT, who presented LESLIE R. BLASIUS, Service Engineer of the New York Telephone Co., who, in turn, presented a short sound film on speech, showing the proper and improper methods of presenting a talk to an audience. Blasius also made some recordings of several of the men and women in the audience talking across the room to each other through telephones, which when played back were quite amusing but also brought out the many right and wrong ways of using the telephone.

LESTER LEVINSON,
Recording Secretary

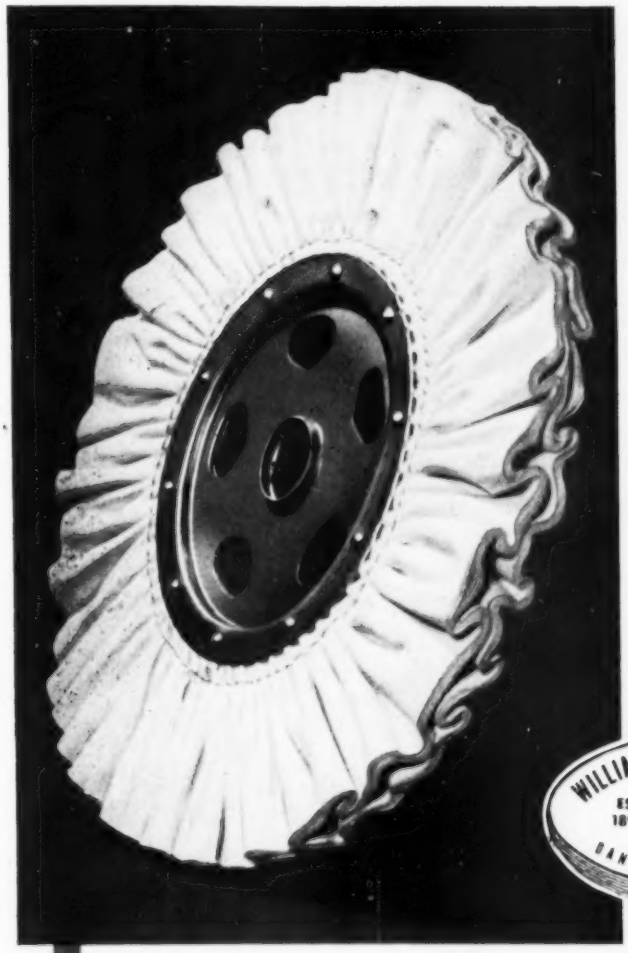
PHILADELPHIA BRANCH

The regular meeting was held at the Engineers Club, Philadelphia, March 26, preceded by a dinner, with 62 attending.

Three new active members were admitted; one application was received. A guest, L. KEMP of the St. Louis Branch, was introduced. Ternstedt Division of Trenton was well-represented with 10 of its Philadelphia Branch members present. The following were elected to serve for the 1954–1955 term:

President—EDWIN F. OTTENS
1st Vice-President—W. H. TRUSDELL
2nd Vice-President—R. L. FARREN, JR.
Secretary—I. WM. MARCOVITCH
Treasurer—G. M. LONG
Librarian—I. K. HAUSEMAN
Board of Managers—ALFRED H. POPP, NAT VERRELLE, RALPH D. WIRT
Delegates—SAMUEL HEIMAN, EDWIN F. OTTENS, I. WM. MARCOVITCH
Alternates—G. M. LONG, FREDERICK FULFORTH, PAUL MENTZER, SR.

The speaker was WILLIAM INNES, MacDermid, Inc., whose topic was "Factors Influencing High-Speed Plating." He



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gave the derivation of the equation for determining theoretical current density and discussed the effects of each factor and limitations of variables. He spoke of the size of the conductor, type of agitation, temperature, anion dissociation constant, concentration, freedom from foreign cations as the important factors for high-speed plating.

I. Wm. Marcovitch, *Secretary*

PROVIDENCE-ATTLEBORO BRANCH

At the February 15 meeting held at the Providence Engineering Hall, the following were elected to membership: Thomas Lawrence, William B. Newman and Sidney Kareemo.

After a short business meeting, the election of officers took place and the following members were elected:

President—Pierre B. Lonsbury
1st Vice-President—William Matthew
2nd Vice-President—Eric Shearstone
Secretary—Henry Shavier
Librarian—Leslie Fergusen

The feature of the evening was the question and answer period. The panel consisted of P. Lonsbury, authority on chromium; Ed Parker, authority on gold and John Claren, authority on plating in general.

The meeting adjourned at 10:30 P. M. with 27 members and guests present.

H. Shavier, *Secretary*

ROCHESTER BRANCH

At the March 15 meeting at the 40 & 8 Club, the most important item considered at the business session was adoption by the branch of a set of by-laws (contingent on formal approval by the Supreme Society Law Committee). This move culminates some fine hard work on the part of Joe Hull and Bob Flint, and will result in improved operation of branch affairs.

Hull also reported on the Toronto interim meeting which he attended as a Delegate. Other items of business that were considered included appointment of a nominating committee, acceptance of applications for membership, and a report by the Secretary on a meeting with representatives of several local technical societies concerning future joint meetings.

Following the business meeting, Ed Wallin introduced John H. Swift, of the Swift Industrial Chemical Co., who spoke on "Steels—Compositions and Heat-Treatments of Interest to the Plater." Swift's talk was very interesting and practical and revealed effects of metallurgical variables on plated finishes. Slides further enhanced the value of the talk, and a question and answer period extended into informal discussions, while refreshments were served.

Ed Wallin, *Secretary*

SAGINAW VALLEY BRANCH

The March 10 meeting, preceded by a delicious ham dinner held at Zehnder's Hotel in Frankenmuth ,Mich., was attended by 56 members and guests.

President Manuel Ben opened the business meeting with acknowledgment for the fine work done by the secretary and treasurer, S. Harger; chairman of "Stag Day Outing," R. Brink, and to the chairman of the "Ladies' Night Party." A. W. Sundruck was called upon to give the results of the election of officers for the 1954–1955 season. The new officers:

President—George H. Carter
1st Vice-President—Robert A. Nyquist
2nd Vice-President—Robert J. Brink
Secretary-Treasurer—Dennis J. Goddyne
Recording Secretary—Donald R. Malthaner
Librarian—G. Paul Beardsley
Board of Managers—Manuel Ben, Chairman; Elson A. Brisson, Dennis S. Kelly, Alfred Muehlenbeck, one year; and George L. Gutschier, Sr., Stewart J. Harger, D. William Snyder, two years.

The educational session consisted of our own Board of Experts, Manuel Ben of G. M. Research, Joseph Farmer of Lufkin Rule Co., Alfred Muehlenbeck of Saginaw Industries, and Stewart Harger of AC Spark Plug Division.

Ben's subject for the evening was "The Carbon Treatment of Plating Solutions." After he gave some interesting physical characteristics of activated carbon, emphasis was placed upon changing *p*H or temperature from conventional methods in order that the particular organics causing trouble may be absorbed.

Farmer talked on "Continuous Plating of Steel Tape." This steel, which is used for measuring tapes, is first phosphated, printed, and dried. The tape is then plated with nickel and chromium to obtain the various finishes required, mainly white, satin, or bright.

"Bright White Brass Plating" was discussed by Muehlenbeck. The coating, used as a substitute for nickel plate, and its properties of coverage, brightness, color and ductility were the main points of interest. The use of plated articles were pointed out to illustrate these properties.

Harger spoke on "Protective Chromate Treatments on Zinc Plate." The purpose, development, type of coating, and testing of the film formed were the chief points discussed.

Paul Beardsley,
Recording Secretary

ST. JOSEPH VALLEY BRANCH

At the regular meeting held at the Hotel Elkhart, Elkhart, Ind., on March 3, 26 attended the session.

Larry Baker and J. M. Murphey were elected to active membership. The application from George H. Horne, plating room foreman at Excel Corp., was read.

Ralph Brouwer, Chairman of the Ladies' Night arrangements, announced the program for the April meeting.

Ralph D. Wysong, chairman of the Nominating Committee, submitted the following recommendations for 1954–1955 officers:

President—J. C. Bayman
1st Vice-President—R. Brouwer
2nd Vice-President—A. Jurgensen
Secretary-Treasurer—E. Roth
Librarian—D. H. Kraft
Board of Managers—W. S. McDowell, L. Ragué, A. Wiegand and R. Dearth

President McDowell opened the 10-minute discussion period. John Bayman asked "Is the plating shop financially responsible for the value of the work which may be damaged or spoiled in the plating operation?" John Lockerbie answered that the AES is a technical and educational society and ordinarily does not get involved in management problems. However, he recommended that the NAMF may have policies to govern such problems. R. O. Hull indicated one concern which went into bankruptcy. Brouwer mentioned one plant which finally proved faulty steel and got out from under a large claim.

Ralph Brouwer then introduced R. O. Hull, who presented his talk, "Tuning Up for Production." The topic was a discussion on the effects of current in electroplating particularly of low efficiency baths such as chromium, cadmium and some specialized cobalt-nickel baths. In many solution test analyses, it was found that the baths themselves were okay but they did not plate right. This led to a study of performance of rectifiers, and it was found that in one local area that only ten out of 40 rectifiers operated properly. This led to a study of the effects of single phase and half-wave current in plating.

Hull emphasized the importance to have both the production rectifiers and laboratory rectifiers operating properly since it is not possible to correlate results if one or the other is not right.

Eugene Roth, *Secretary-Treasurer*

SPRINGFIELD BRANCH

A regular business meeting was opened after dinner at 8:00 by President Ed Koetsch. A vote was taken to determine whether the general membership desired a regular meeting held in May or to forego it because of the New England Regional. A large majority favored the regular meeting in fairness to those that might not be able to go to the Regional. It was also voted to hold this meeting at the Yankee Pedlar in Holyoke, Mass.

JACK COSTIGAN, nominating committee chairman, presented the new slate of officers and they were accepted as follows:

President—PHIL SANDERS
1st Vice-President—ROBERT GIRARD
2nd Vice-President—ROGER HEROUX
Secretary—HENRY HEISSFELD
Treasurer—GEORGE MONGEAU
Librarian—CHARLES GRIFFIN
Board of Managers—ED KOETSCH, A. S. HORTA, FRANK SCHULZ, ED DUPUIS and CHESTER KLIMICK.

WAYNE SANDERS, Past President, installed the new officers. The business meeting was terminated by nomination of delegates and alternates to the national convention in New York City. They were as follows: Delegates—PHILIP PROUTY, Ed Koetsch, John Costigan; Alternates—LARRY FOUNTAIN, ED DUPUIS and ED MAHAR.

Speaker of the evening, introduced by LIBRARIAN JOHN GREENAN, was DR. JOHN B. DAVIS of American International College. His subject was "Hydrogen Embrittlement."

A regular business meeting was held at the Ivy House, West Springfield on April 26, after dinner, and was opened by PRESIDENT P. W. SANDERS at 8:15 P. M. Applications from A. T. GRANGER, EUGENE F. LAPALME, THOMAS HORROCKS and HARRY H. JOHNSON were voted on affirmatively. PERRY FOGG will institute transfer proceedings from the St. Louis Branch.

LIBRARIAN C. GRIFFIN introduced the speaker of the evening, J. M. HOSDOWICH of United Chromium, Inc. His subject was "Chromium Plating".

HENRY L. HEISSFELD, *Secretary*

SYRACUSE BRANCH

The branch held its March 15th meeting at Bill Richards Restaurant, with 48 members and guests enjoying the usual prime ribs of beef dinner.

The speaker of the evening was DR. ALLEN E. CAHILL, research chemist of General Electric Co., Electronics Park, Syracuse, N. Y. Al, who is a member of the Syracuse Branch, gave a very interesting talk on Organic Plating (electrophoretic deposition). This is one field that the platers would do well to keep abreast of. Cahill did an outstanding job of presenting this difficult subject.

The results of the election of officers for the coming year were reported and the officers will be installed in April.

Refreshments were provided by Wyandotte Chemical Corp., Wyandotte, Mich., with HAROLD F. FULTON, acting as host.

Albany, Schenectady, Troy section of Syracuse Branch, held its meeting on March 1 at Panetta's, Menands, N. Y.; a dinner meeting with 56 persons attending.

Temporary officers were elected as follows:

President—F. A. INFIELD
Librarian—J. G. STEVENS

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Secretary—P. D. Callahan

Nominating committee appointed by above officers as follows: Chairman, C. J. Klimek; A. Eisner, E. Wheeler, E. F. Raymond, W. O. Naylon, R. H. Hill.

Following this, all members of AES Syracuse and Springfield units petitioned for a temporary charter and selected the name "Capitol District Branch."

Robert T. Gore of Metals and Thermit spoke on "Tin Plating and Reflowing." Gore gave a very interesting talk and cleared up many of our pressing questions on the subject. A movie from Frederic B. Stevens Co., "Industrial Album," was shown.

Other out-of-town guests were Edwin M. Tinnan of New York and Ed Hollister of Syracuse.

Lindley S. Wood, *Secretary*
Paul D. Callahan, *Acting Secretary*

WATERBURY BRANCH

A regular monthly meeting was held on March 11 in the Colonial Room of the Hotel Elton. After a dinner preceding the meeting, President Frank Eddy opened the forum with the election of new members. He then reported briefly on the interim meeting held in Toronto, Canada, which he attended with E. T. Candee. Eddy stated that the main topic of discussion was how to get more and better technical papers for Plating.

Dr. George Dubpernell, chairman of the nominating committee, presented the following slate of officers:

President—Perry Sloane
1st Vice-President—Joseph Petrocelli
2nd Vice-President—Frederick Foster
Secretary-Treasurer—S. L. Henn
Assistant Secretary—Arthur Tracy
Librarian—Theodore Voyda
Assistant Librarian—Ed Garland
Director of Publicity—William Innes
Board of Managers—Francis Eddy, E. V. Collins, E. W. Couch
Delegates—W. F. Coleman, E. T. Candee, F. T. Eddy
Alternate Delegates—W. P. Innes, B. W. Sage, F. Tirendi

There were no nominations from the floor.

George Tatoian, technical chairman, took over the meeting and introduced Dr. George Dubpernell, who gave his excellent book review, choosing a German technical book, which is a counterpart to our Metal Finishing Handbook.

After the showing of a movie entitled "Decision for Chemistry," Tatoian introduced the speaker of the evening, William P. Innes, technical director of MacDermid, Inc., who spoke on "Factors Influencing High-Speed Plating." Innes briefly described the basic factors governing the speed of plating, how they could be applied to present plating solution, and what equipment is necessary to achieve high rates of deposition.

William P. Innes, *Publicity Director*

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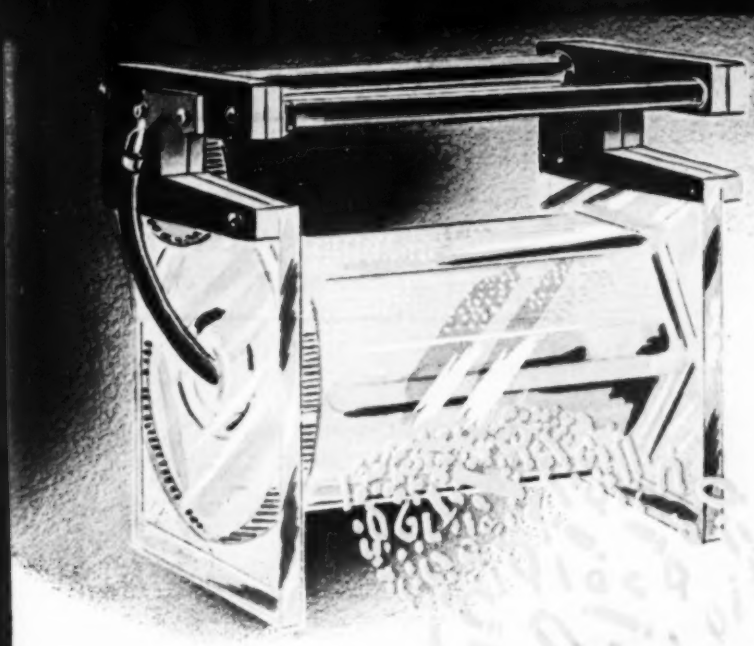

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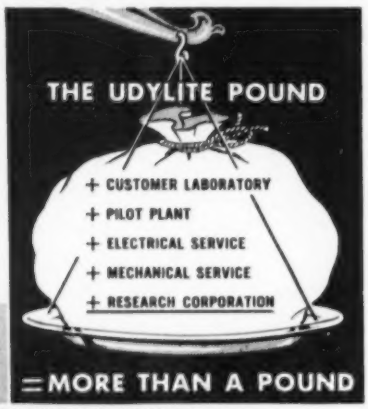

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ALLENTOWN-READING meets third Wednesday of each month in Scotty's Anchorage, Second and Main Streets, Emmaus, Pa. Secretary-Treasurer, Edgar H. Iobst, Jr., 163 Main Street, Emmaus, Pa. Research Finance Committee Chairman, Lee C. Wotring, 526 N. St. Elmo Street, Allentown, Pa.

BALTIMORE-WASHINGTON meets second Tuesday of each month with meetings in Baltimore at the Engineers' Club and in Washington, D. C., at the National Bureau of Standards. Secretary, Carl H. Thiede, 8426 Piney Branch Road, Silver Springs, Md.

BOSTON meets first Thursday of each month in Hotel Statler. Secretary, Dr. George P. Swift, 53 Galen Street, Watertown 72, Mass. Research Finance Committee Chairman, Louis V. Gagnon, 53 High Street, Natick, Mass.

BRIDGEPORT meets second Friday of each month in Barnum Hotel. Secretary-Treasurer, Robert G. Parker, 25 Beverly Road, Trumbull 58, Conn.

BUFFALO meets first Friday of each month in Markeen Hotel. Secretary Eric G. Sampson, Jr., 43 W. Main Street, Falconer, N. Y.

CHICAGO meets second Friday of each month at 6 P. M. at Western Society of Engineers, 84 E. Randolph Street. Sec-

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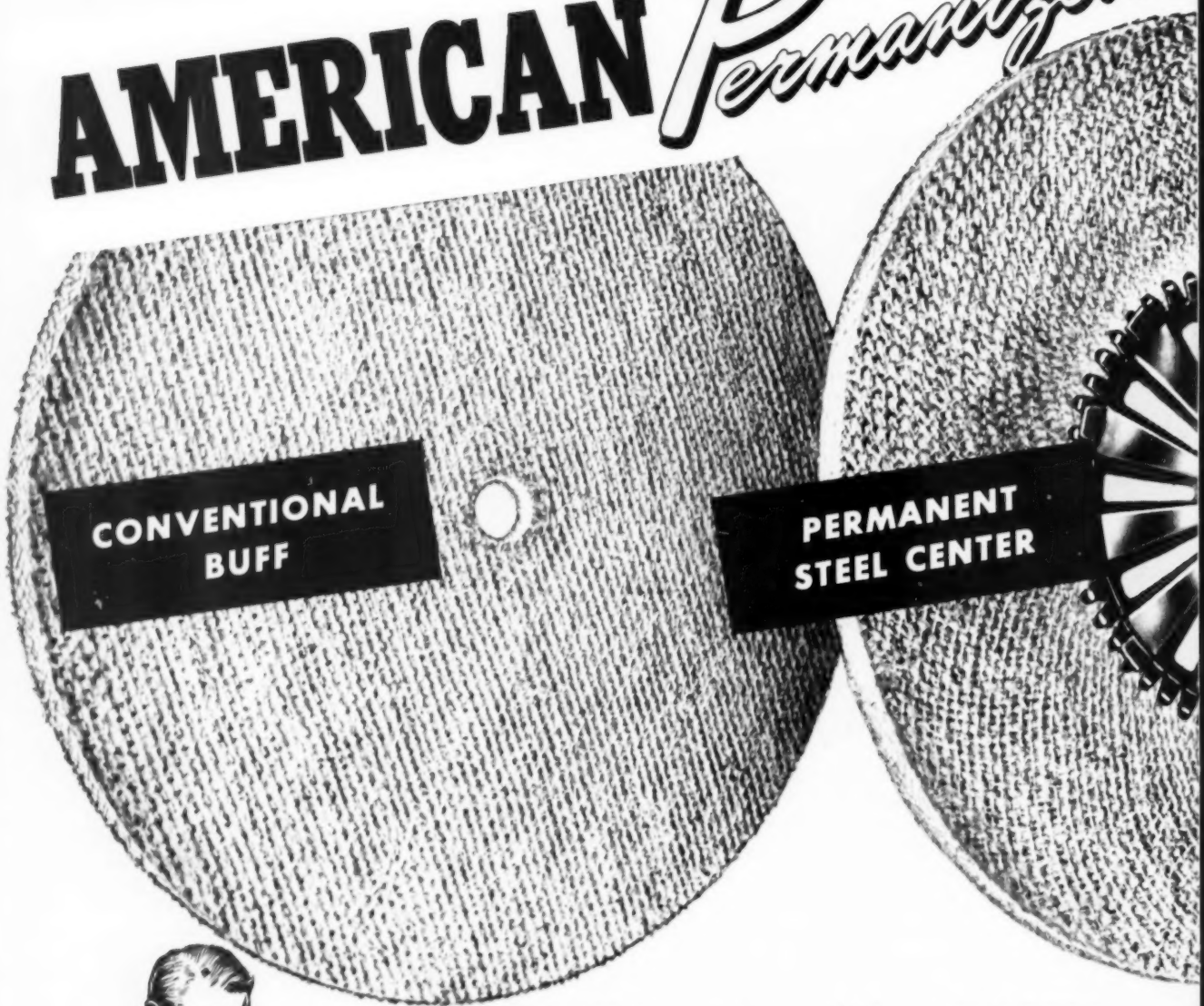

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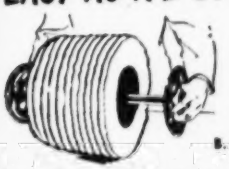

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CLEVELAND meets first Friday of each month in Hotel Carter at 8 P. M. Secretary-Treasurer, A. J. Lupien, 4408 Carnegie Avenue, Cleveland 3, Ohio. Research Finance Committee Chairman, to be appointed.

COLUMBUS meets first Friday of each month at 8 P. M. in Battelle Memorial Institute Auditorium. Secretary-Treasurer, Harry L. Moore, 505 King Avenue, Columbus 1, Ohio. Research Finance Committee Chairman, to be appointed.

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HAMILTON BRANCH meets third Thursday of each month in the Conference Room, West End Plant, Canadian Westinghouse Company, Ltd. Secretary, R. Burke, c/o Swift Devices, 14 George Street, Hamilton, Ontario, Canada.

HARTFORD meets third Monday of each month in Hotel Bond at 7:45 P. M. Secretary, Stanley Platoz, 26 Erwin Place, New Britain, Conn. Research Finance Committee Chairman, Frank W. Smith, 46 Cottage Street, Meriden, Conn.

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INDIANAPOLIS meets first Wednesday of each month at Fox Steak House, 1207 E. Washington Street. Secretary, Miss Edna Rohrabaugh, 816 Robert Street, Lafayette, Ind.

JACKSON-LANSING meets second Tuesday of each month alternating between Meadow Lark Inn in Jackson and Porter Hotel in Lansing. Secretary-Treasurer, E. J. Bosca, 411 Third Street, Jackson, Mich. Research Finance Committee Chairman, H. McKlueen, 3617 McCain Road, Jackson, Mich.

KANSAS CITY meets fourth Thursday of each month at Roselli's Restaurant at 6:30 P. M. Secretary, Olin K. Bock, 5317 W. 58th Street, Mission, Kans.

LANCASTER meets second Friday of each month at 8 P. M. September, December and April meetings are held at Hanover, York and Harrisburg, respectively; all other meetings at the Old Mill Inn, Lancaster, Pa. Secretary-Treasurer, Harry A. Saylor, 40 N. Poplar Street, Elizabethtown, Pa. Research Finance Committee Chairman, Harry Hovis, Lincoln Highway, West Lancaster, Pa.

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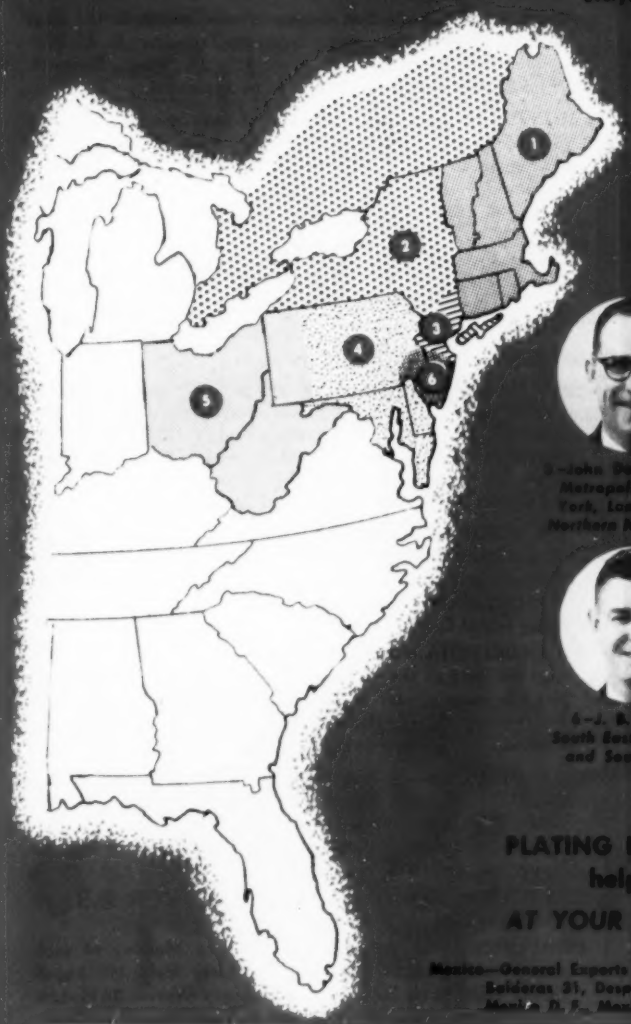

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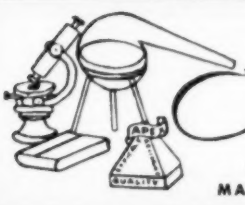

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LOUISVILLE meets third Thursday of each month in Room 119, Speed Scientific Building, University of Louisville. Secretary-Treasurer, Joseph G. Sterling, 1169 Keller Avenue, Louisville, Ky. Research Finance Committee Chairman, T. K. Allison, 2502 Manchester Rd., Louisville 5, Ky.

MELBOURNE, AUSTRALIA meets third Thursday of each month at 8 P. M. in Metallurgy Theatre, Melbourne Technical College, 124 Latrobe Street. Honorary Secretary-Treasurer, S. B. Pearce, 11 Waterloo Street, Carlton, Melbourne, Australia.

MILWAUKEE meets first Friday of each month in the East Room, Hotel Ambassador. Secretary-Treasurer, E. E. Piellusch, 2921 S. 90th Street, West Allis 14, Wisc. Research Finance Committee Chairman, to be appointed.

MONTREAL meets first Tuesday of each month in Mount Royal Hotel. Secretary-Treasurer, Jean Monette, 11700 Notre Dame St., E., Montreal, P. Q., Canada. Research Finance Committee Chairman, P. M. Coady, c/o Alloycraft, Ltd., 27 Hillside Avenue, Westmount, Montreal 6, P. Q., Canada.

NEWARK meets third Friday of each month at 8 P. M. in Hotel Robert Treat. Secretary-Treasurer, George Wagner, Hy-Grade Electro Plating Company, 35 Fourth Street, Newark, N. J. Research Finance Committee Chairman, John Gumm, 538 Forest Street, Kearny, N. J.

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NEW YORK meets second and fourth Fridays of each month in the Statler Hotel. Secretary-Treasurer, George Schore, 150 Bennett Avenue, New York 33, N. Y. Research Finance Committee Chairman, Milton Nadel, 41-15 50th Avenue, Long Island City 4, N. Y.

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PORTLAND. Secretary, K. B. Humphrey, 936 N. E. Floral Place, Portland 31, Oregon.

PROVIDENCE-ATTLEBORO meets third Monday of each month in Providence Engineering Society Hall, 195 Angell Street, Providence, R. I. Secretary, Henry Shavier, 32 Hodges Avenue, Taunton, Mass. Research Finance Committee Chairman, Pierre B. Lonsbury, 78 North Avenue, Attleboro, Mass.

ROCHESTER meets third Monday of each month at the 40 & 8 Club, 933 University Avenue. Secretary, Edwin Wallin, 70 Peach Tree Road, Penfield, N. Y. Research Finance Committee Chairman, Cecil Thornton, 20 Lafayette Parkway, Rochester 10, N. Y.

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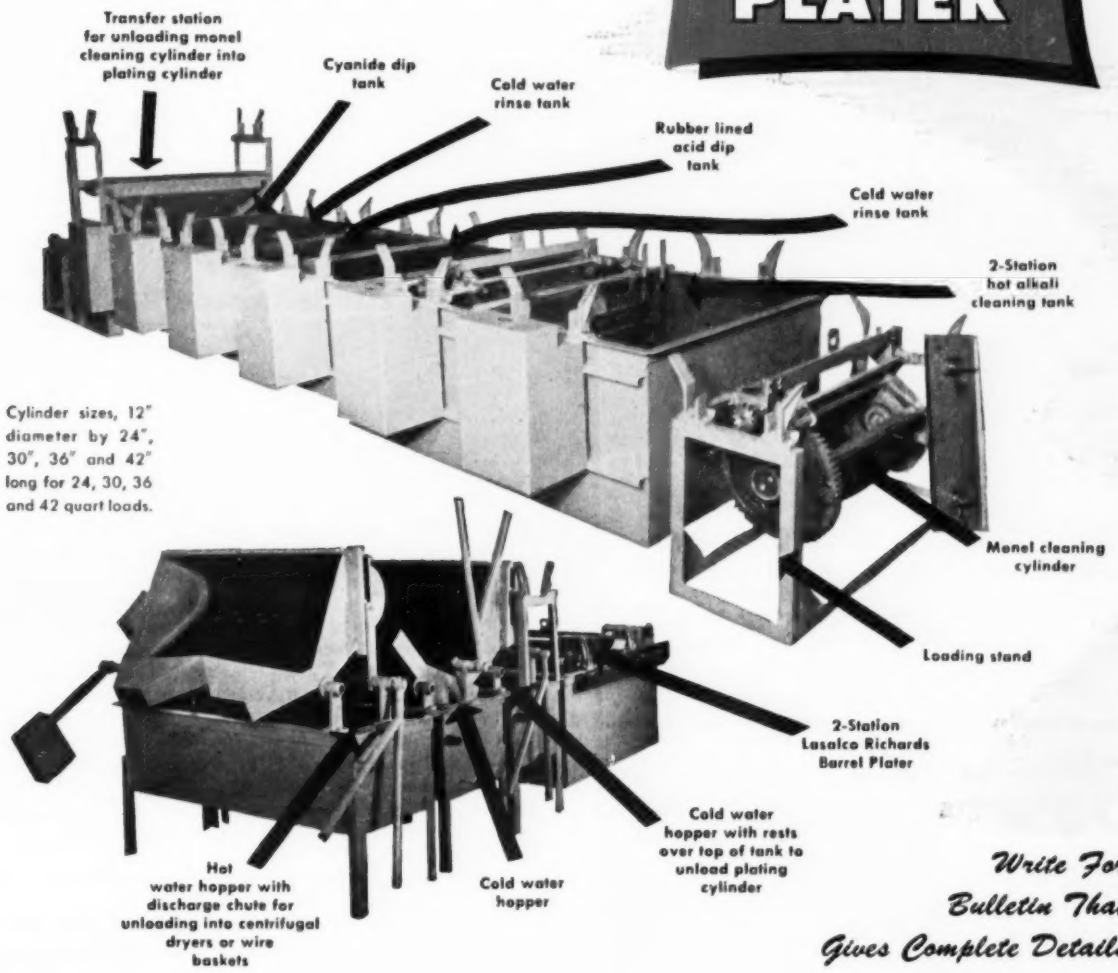
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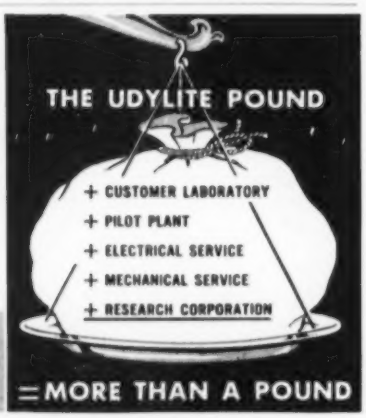

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SAGINAW VALLEY meets for dinner at 6:45 P. M. and meeting at 8 P. M. at Zehnder's, Frankenmuth, Mich., second Wednesday of each month, September through May, except February. Secretary-Treasurer, Stewart Harger, 3214 Norwood Drive, Flint, Mich.

ST. JOSEPH VALLEY meets first Wednesday of each month at 8 P. M. in Elkhart Hotel, Elkhart, Ind. Secretary-Treasurer, Eugene Roth, 739 N. College Street, South Bend 28, Ind. Research Finance Committee Chairman, Ralph Brouwer, 361 Maple Avenue, Holland, Mich.

ST. LOUIS meets second Wednesday of each month at the York Hotel, 6th and Market, St. Louis, Mo. Secretary-Treasurer, E. R. Hunleth, 4415 Michigan Avenue, St. Louis, Mo. Research Finance Committee Chairman, to be appointed.

SAN FRANCISCO meets second Thursday of each month, alternating between St. Julien Restaurant, 140 Battery Street, San Francisco, and El Curtola Restaurant, 510 17th Street, Oakland. Secretary-Treasurer, Horace J. Smith, 319 Alta Loma Drive, South, San Francisco, Calif. Research Finance Committee Chairman, to be appointed.

SOUTHEASTERN meets second Friday of each month at the Belmont Steak House, Atlanta, Ga. Secretary-Treasurer, W. T. Weymouth, 173 Clay Street, S. E., Atlanta, Ga.

SPRINGFIELD meets fourth Monday of each month in the Ivy House, Route 5, West Springfield, Mass. Secretary, Henry L. Heissfeld, 74 Chilson Street, Springfield 8, Mass. Research Finance Committee Chairman, Arthur Pearson, 102 Ely Avenue, West Springfield, Mass.

SYDNEY, AUSTRALIA meets second Thursday of each month at 7:30 P. M. at 155 King St., Sydney. Secretary-Treasurer, M. Taylor, 44 Aubin St., Neutral Bay, N.S.W., Australia.

SYRACUSE meets third Monday of each month in Richard's Restaurant. Secretary, Lindley Wood, 1329 Bellevue Avenue, Syracuse 4, N. Y. Research Finance Committee Chairman, George W. Cavanaugh, 129 Kenwood Avenue, Syracuse 8, N. Y.

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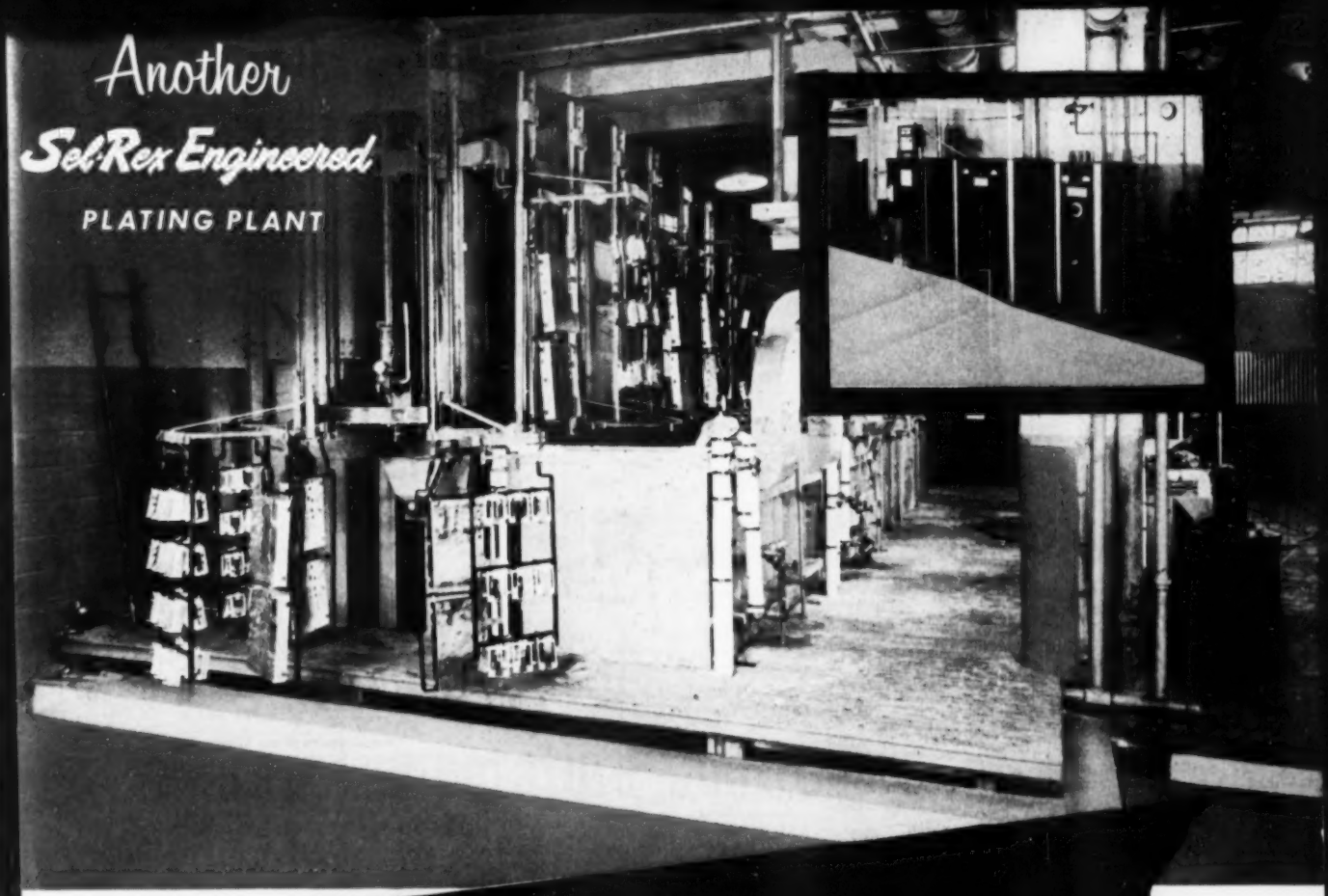
TORONTO meets second Friday of each month in Royal York Hotel. Secretary, Robert L. Edwards, 1106 Dovercourt Road. Toronto, Ont., Canada. Research Finance Committee Chairman, K. Wells, 370 Victoria Avenue, Toronto, Ont., Canada.

TWIN CITY meets first Monday of each month, October through June, in the Covered Wagon (Lodge Room), 114 S. 4th Street, Minneapolis, Minn., with dinner at 6:30 P. M. and business and technical session at 8:00 P. M. Secretary-Treasurer, Robert L. Buckley, c/o Industrial Chemical & Equipment Company, 205 11th Avenue So., Minneapolis 15, Minn. Research Finance Committee Chairman, to be appointed.

WATERBURY meets second Thursday of each month in Elton Hotel. Dinner, 6:30 P. M.; meeting, 8 P. M. Secretary Treasurer, Spencer L. Henn. P. O. Box, Drawer B, Cheshire, Conn.

WESTERN ONTARIO meets third Friday of each month in William Pitt Hotel, Chatham, Ontario. Secretary-Treasurer, J. Vollans, 1262 McDougall St., Windsor, Ontario, Canada.

WICHITA meets fourth Wednesday of each month at 6:30 P. M. at Lydroy's Eighty-one Grill. Secretary-Treasurer, Harry D. Burgess, 249 North Mosley, Wichita, Kans.



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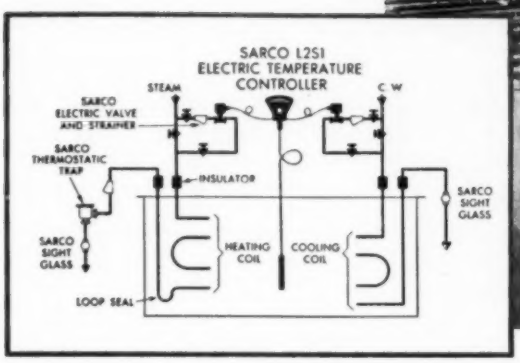

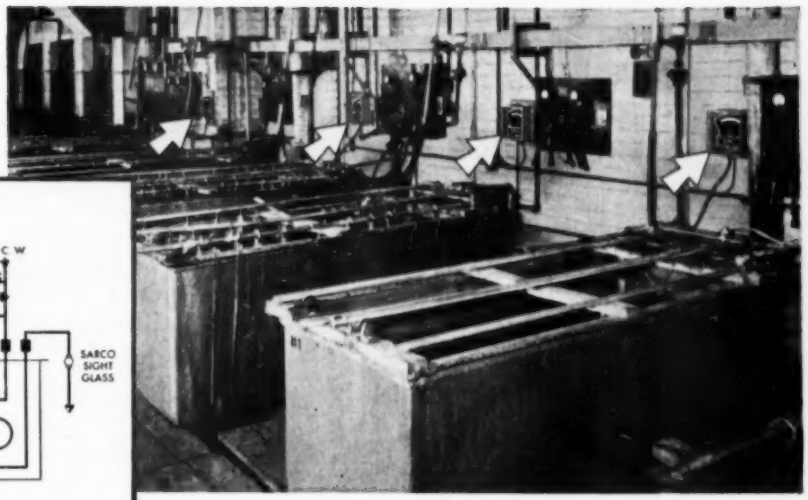

▲ Over 30 Sarco Electric Temperature Controllers help maintain high quality plating at Ronson Art Metal Works, Inc., Newark, N. J. Controllers are used on chrome, nickel, copper, silver and gold plating tanks.

Why RONSON relies on Sarco Temperature Controllers for high quality plating

RONSON, manufacturer of the "World's Greatest Lighter," knows that high quality plating depends upon close control of many variables, the most important of which is the bath temperature.

They know that erratic bath temperatures usually result in costly rejects, wasted man hours, and dissociation of expensive solutions.

In 1948, Ronson made trial installations using Sarco LSI Electric Temperature Controllers and other competitive devices. The Sarco LSI's proved superior on all counts: dependability, cost, ease of installation, and maintenance.

As a result, LSI's are now standard equipment at Ronson. Mr. J. Rembecki, metallurgical engineer, reports that Sarco LSI's have given trouble-free service for over five years.

For information on how Sarco LSI's can cut your plating costs, ask for Bulletin No. 6. Call your local Sarco agent, or write direct to Sarco Company, Inc., Empire State Bldg., New York 1, N.Y.

Sarco LSI Electric Temperature Controller

Can hold bath to ±1° F.; settings changed by turning one knob. Provides automatic control of heating and cooling to help prevent:

- Changes in current density
- Variations in plate thickness
- Variations in quality
- Dull finishes
- Breakdown of plating solutions
- Crystallization of salts

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SARCO *improves product quality and output*

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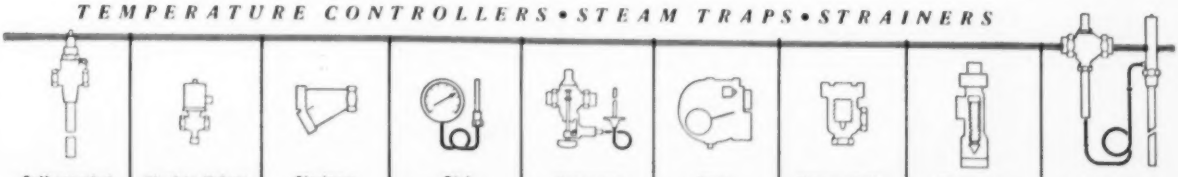

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"Rockwell" *Greetings*
TO DELEGATES AT THE
41st Annual Convention

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USE READER SERVICE CARD; INDICATE A 751.

Future Meetings

AMERICAN SOCIETY FOR TESTING MATERIALS 57TH ANNUAL MEETING (and exhibition) at the Hotel Sherman, Chicago, June 13–18, 1954.

37TH ANNUAL CONFERENCE AND EXHIBITION OF THE CHEMICAL INSTITUTE OF CANADA at Royal York Hotel, Toronto, Ontario, June 21–23, 1954.

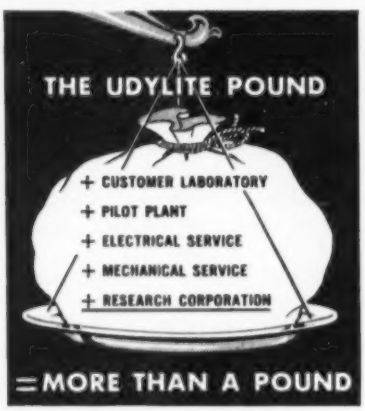
AES EXECUTIVE BOARD meeting Sunday, July 11, 1954 at the Statler Hotel, New York, N. Y.

41ST AES ANNUAL CONVENTION at the Hotel Statler, New York, N. Y., July 12–15, 1954.

PLATING'S EDITORIAL BOARD meeting aboard the Hudson River steamer "Liberty Belle" on Wednesday, July 14, 1954 at 2:00 P. M.

AES RESEARCH COMMITTEE meeting at the Statler Hotel, New York, N. Y., on Wednesday, July 14, 1954 at 8:00 P.M.

Would you like to get extras for the dollars you spend?



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ANALYTICAL TEST SOLUTIONS AND EQUIPMENT
Testing Service for the Electroplating Trade.

USE READER SERVICE CARD; INDICATE A 754.

How "new" are your plating line cleaners?

Recent advances in the cleaning field may make the products you currently use out-dated and old-fashioned.

A truly modern cleaner will exhibit most, or all of the advances listed below. These features add up to better dollar value, easier handling, and, most important, more efficient cleaning.

Features of a Modern Cleaner

1) Dedusted to eliminate irritating, dangerous dust in the air when tanks are charged. Ask your workers!
2) Anhydrous to save you considerable shipping and handling costs as well as space. *Full measure—full value!*
3) 100% Active to provide maximum efficiency. No excess soda ash or cheapening extenders. Every ingredient should have a purpose!
4) Smut-Removing Power to assure a smooth bright electroplate. Modern cleaners go far toward licking this problem.
5) Versatility—the ability of the cleaner to remove a variety of soils and to operate effectively under a wide range of conditions.

And our latest feature . . .

6) Prevention of Redeposition—special surface active agent combinations to prevent redeposition of dirt and oil on work as it leaves the cleaner bath.

Yes, you find these features in Pennsalt Cleaners—a direct result of Pennsalt's long experience, constant field work, and extensive research. Ask your Pennsalt sales engineer to tell you more about the Pennsalt line, including some new and better products for low-foaming detergent systems. Or write for more information on how these features can help you with your specific problem.

Metal Processing Dept.

PENNSYLVANIA SALT MANUFACTURING CO.

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Pennsalt Chemicals

A BETTER START FOR YOUR FINISH

ANODEX Reverse Current Cleaner for Steel
— the first and still the best heavy duty electrolytic steel cleaner. Anodex has been constantly improved and still leads the field of reverse current cleaners. Data Sheet No. 4
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— a low cost liquid addition agent which can be added to any cyanide copper solution. Increases speed of plating, reduces carbonate buildup, lowers cyanide consumption. Data Sheet No. 5
The ALUMETEX PROCESS
for Electroplating on Aluminum — especially developed to produce excellent adhesion and luster for any electrodeposit on all commercially used alloys of aluminum. Data Sheet No. 13.
CHROMETEX Nickel Activator
— Dry acidic powder used to increase the covering power of chromium over nickel and to assist in plating nickel on nickel. Data Sheet No. 8
METEX STRIP AID
— Strips nickel, copper, and brass from steel bases with no attack of steel. Strips by chemical attack. Steel equipment satisfactory. (Licensed for the practice of the Method of U. S. Patent No. 2,649,361) Data Sheet No. 30
TROXIDE— Dry Acid Pickling Salts
— used to replace conventional acids in pickling scale, rust and oxides from metals, as well as for neutralizing alkalies. Eliminates hazards involved in shipping, storing, handling and mixing dangerous acids. Eliminates fumes and corrosion to adjacent equipment. Data Sheet No. 14
MACDERMID ALUMINUM BRIGHT DIP
— An acidic formula specifically developed to produce a brilliant luster on most types of non-silicon aluminum alloys. Data Sheet No. 21
METEX FILTER POWDER
— Fine, uniform interlocking fibers hold tightly to filter cloths, plates, stones or screens, yet are readily removed when required. Contains no inert matter to cause roughness. Suitable for acid or cyanide filtering. Data Sheet No. 28
THIRTY TWO YEAR SERVICE TO THE METAL

MACDERMID BRIGHT COPPER *Plating Process*

— Produces a bright copper deposit over a wide range of operating conditions. Has excellent covering power and denseness of copper deposit. Is particularly adapted as an undercoating for nickel or chromium. Easily controlled by anyone with general plating knowledge.

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Be sure and write today for your complete file size data book on the MacDermid, Incorporated Compounds recently developed for superior metal cleaning, plating and finishing procedures.

. . . for around Manhattan Cruise

MacDermid, Incorporated has chartered the New Yorker Cruise Ship for a four hour cruise around Manhattan during the American Electroplaters' Convention, July 13th — busses leave Statler Hotel at 7:30 p.m. We want our friends to join us so see your MacDermid representative soon for your ticket — we can accommodate only 450. Our address during the convention will be:—

THE WASHINGTON ROOM
HOTEL STATLER
NEW YORK CITY

AROUND MANHATTAN CRUISE
ON BOARD NEW YORKER CRUISE SHIP
. . . AMERICAN ELECTROPLATERS' CONVENTION . . .
JULY 13, 1954
BUSSES: Leave Statler Hotel at 7:30 p.m.
BOAT: Leaves pier 83, No. River, at 8 p.m.
For full particulars, see MacDERMID, INCORPORATED
at the Washington Room, Hotel Statler, N.Y.C.
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WATERBURY 20, CONNECTICUT

LEA newsreel

JUNE, 1954

LEA SATIN FINISH—"The Finish of Quality"

- Satin Finished Articles have that quality look and retain this appearance for a long time because the finish is not easily marred.
- The economy of the Satin effect is well known. The Satin Finish blends with and eliminates the effect of underlying metal imperfections. As a result one or more finishing operations become unnecessary, thereby cutting production costs.
- Satin Finished products are finding more and more consumer acceptance everyday

Here are some case histories showing how the Lea Method of Satin Finishing has helped cut production costs.

ALUMINUM

Material — Aluminum.
Article — Furniture trim.
Method of Forming — Punching and stamping.
Final Finish — Satin.

Lea Method:
1. 120 set-up wheel.
2. Lea Compound Grade "L" or "C" on 10" diameter loose muslin buff at 1500 r.p.m.
3. Anodize.

Remarks —
Previously this work had been done by the use of Tripoli buffing after the polishing wheel operation, resulting in some polishing marks remaining. This step involved excessive cleaning which was entirely eliminated by the Lea Method.

BRASS

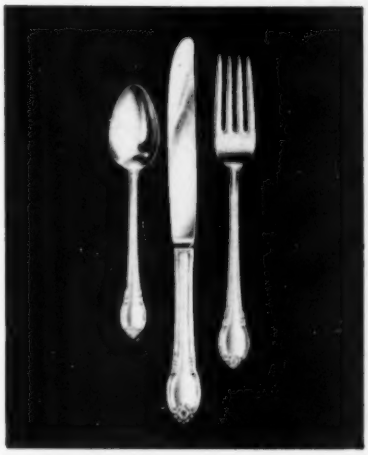
Material — Brass.
Article — Heavy Door Pulls.
Method of Forming — Casting & machining.
Final Finish — Satin finish.
Lea Method:
1. 100 set-up wheel (canvas).
2. 120 set-up wheel (felt).
3. Grade "B" Lea Compound on a 10" diameter muslin buff with radial sewing at 1800 r.p.m.
4. Lacquering.

Remarks —
The Lea Compound step was done in the same direction as the last polishing wheel operation so that there was no crossing of lines. The finish desired was produced with a minimum number of wheel operations and all cleaning eliminated.

STEEL

Material — Steel.
Article — Escutcheon plates, door plates, etc.
Method of Forming — Stamped.
Final Finish — Special satin brass plate.
Lea Method:
1. Brass plate.
2. Lea Compound Grade "R" on a 10" loose buff at 1500 r.p.m.
3. Lacquering.

Remarks —
In substituting for wet scratch brushing, the Lea Method eliminates all cleaning and drying and the nuisance of water stains on the brass surface.



SILVER

Material — Silverplate.
Article — Tableware.
Method of Forming—Forging (nickel silver).
Final Finish — Butler Finish.*
Lea Method:
1. Silver plate.
2. Lea Compound Grade "FG," "MF," or "MH" on 6" brass wire wheel at 800 r.p.m.

Remarks —
Fine grades of Lea Compound on a brass wire wheel produced the bright line finish required without the aid of a prior color buffing operation common to the old wet scratch brushing procedure.

*Butler Finish — A fine delicate satin finish with some brilliance.

THE LEA MANUFACTURING CO.
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POLISHING WHEEL CEMENT
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